OPTIMIZATION OF TRANSPORTATION COST IN THE TRANSFER OF FERTILIZER FROM IFFCO PLANTS

A Study of market and analaysis

DISSERTATION SUBMITTED

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B Y

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It is certified that the dissertation entitled "Optimization of Transportation Cost in the Transfer of Fertilizer from I.F.F.Co Plants, A Study of Market Analysis" which is being submitted by Mr. Virendra Kumar Agrawal in partial fulfilment of the requirement for the award of the degree of Master of Business Administration of the Aligarh Muslim University, Aligarh, is a record of the student's own work carried out by him under my supervision and guidance. The matter entitled in this dissertation has not been submitted for the award of any other degree or diploma in this University and elsewhere.

I am fully satisfied with his work and this dissertation is based on the information and data collected by him.

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(Virendra Kumar Agrawal)

I N D E X

CHAPTER - I

I N T R O D U C T I O N

INTRODUCTION

(A) DEFINITION

Like men and animals, plants also need food for their growth and development. But with a difference. Animals and man, can only subsist on food in organic form, that is, on food derived from plant or animal products. Plants on the other hand have the power of building up organic tissues directly from inorganic materials. They live, grow and breed by taking up water and mineral substance from the soil, carbon dioxide from the air and energy from the sun to form plant tissues. The leaves of plants are the most miraculous chemical laboratories in the world. From a limited number of chemical elements draw from the soil and the air, plants build up a vast array of grains, fruits, fiber, flowers, timbers, gums, essential oils, tannis, sugar, drugs, alkaloids etc. These chemical elements are known as "Plant Nutrients".

Fertilizer is defined as 'any material' organic or inorganic, natural or synthetic which supplies one or more of the chemical elements required for plant growth. Sixteen elements are identified as essential elements for plant growth, of which nine are required in macro quantities and seven in micro quantities.

(B) ESSENTIAL ELEMENTS

Essential elements for plant growth are :-

No.	Name of element	Nomenclature
1.	Carbon	
2.	Oxygen	
3.	Hydrogen	
4.	Nitrogen	
5.	Phosphorus	Primary nutrients
6.	Pottassium	
7.	Calcium	
8.	Magnesium	Secondary nutrients
9.	Sulphur	
10.	Boron	
11.	Chlorine	
12.	Copper	
13.	Iron	Micro nutrients
14.	Manganese	
15.	Molybdenum	
16.	Zinc	

Carbon, oxygen and hydrogen are supplied by air and water and are, therefore, not treated as nutrients by fertilizer Industry. The main aim of Industry is to provide the primary and secondary nutrients which are required in macro and micro quantities.

The primary nutrients are normally supplied through chemical fertilizers. They are Chemical Compound containing one or more primary nutrients and are generally produced by chemical reaction. Whatever be the chemical, its most important ingredient for plant growth is the nutrient content.

The primary nutrients are nitrogen, phosphorus and potassium, however their concentration in a chemical fertilizer is expressed as the percentage of total nitrogen (N), available phosphorus (P205) and soluble potash (K_2O). Thus ammonium sulphate contain 21% N, Single super phosphate 16% P_2O_5 and muriate of potash 60% K_2O.

(C) GRADES OF FERTILIZER

The grade of a fertilizer is expressed as a set of three number in the order of percent N, P_2O_5 and K_2O.

If a nutrient is missing in fertilizer, it is represente by a zero. Thus ammonium sulphate is represented bu 21:0:0 and single super phosphorus 0:16:0. When a fertilizer contains more than one nutrient, they are shown in the grade. The diaammonium phosphorus is shown as 18:46:0, indicating that it contains 18% N, 46% P_2O_5 and no potash. Similarly sulpha a nitrophosphate is shown as 15:15:15 indicating that the product contain 15% each of N, P_2O_5, and K_2O.

A whole range of nitrogeneous, phosphate and N.P.K. Fertilizers are produced in India. In the absence of any commercial source of potash the entire requirement of potassic fertilizer is imported.

Further it is important that, when adding fertilizers to the soil, that different crops may require relatively more of one element than another but a balance between all the

elements is essential. As an instance, Brassicas (the cabbage family) are gross nitrogen feeders while root crops (e.g. carrot) require far less nitrogen and an excess may be harmful.

The elements needed by the plant are in the form of various compounds. Such as Nitrate and Phosphate and may be applied as artificial fertilizers, which are manufactured.

Ist Group :

Nitrogen is mainly concerned with vegitative growth, encouraging leaf and stem formation. It is also contained in chlorophyl the green colouring matter of the plant and one of the symptoms of nitrogen starvation is a pale green colour to the leaf, indicating a lack of chlorophyl. Most of the Nitrogen compounds used are soluble and it is always wise to apply only little and required quantity. If given in large doses, much is wasted in the soil.

Nitrogen fertilizers should not be given to any plant late in the season, as sappy growth, easily damaged by winter cold and frosts is encouraged. Similarly at no time should large quantities be given toany plant, as this result in an excess of leaf growth, which is very susceptible to disease.

Sulphate of ammonia is the most used inorganic Nitrogeneous fertilizer and is excellent for spring used on seed beds, lawns and early crops and it is contained in most fertilizer mixture. It makes soil acid in reaction and if both lime and nitrogen are required nitro-chalk should be used. Other nitrogen fertilizer used are potassium nitrate, which

has the advantage of supplying two major elements at once is very soluble.

Phosphorous is concerned in the plant with the production of young cells of the root and also encourages flower and fruit production and early ripening. Most of the compounds are relatively insoluble (rendering absorbtion by plant difficult) and so large amounts can be supplied without deleterious effects especially on acid soils.

Phosphorous is generally applied to the soil in the form of phosphate and among these super phosphates of limes is quick acting. More slow acting is basic slag, a by product of Steel Industry, sold as a fine black powder. This is good for application to acid, wet soils.

Potassium, the third element is essential for good flower and ripeness in fruits. Desert apples, potatoes, cereals and crops all need potash in some quantity and if excess nitrogen has been applied a dressing of potash may counter balance the effect. Sulphate of potash is the main inorganic compound in use. Murate of Potash (Potassium chloride) to which some crops are sensitives, is much less used. It should be applied as a winter dressing before the crops is shown to lose the impureties by weathering. Sulphate of potash is purer and may be applied during the growing season.

Wood ash contains variable quantities of Potassium and provided that the ash has not been washed by rain and the Potassium leached out, is a useful addition to the soil.

IInd Group

Elements required in lesser quantities in the plant :-

Calcium, although required in small quantities in the plant has profound effects on the soil. Its main function in the plant is in the production of the cell walls, but in the soil it helps to bind light soils together and to make the structure of sticky clay soils finer and more workable. Soils without calcium are acidic and tend to lock up some elements in an insoluble form. Addition to calcium changes the acidity, making it slightly alkaline or neutral and release the locked elements.

Calcium is applied as some form or derivative of Calcium Carbonate, commonly known as Line, which can be obtained in various forms. Hydrated or slacked lime (calcium hydroxide) is commonly used on clay soils and chalk or ground lime stone on lighter soils.

Gypsum or Calcium sulphate, is sometimes recommended to supply calcium, but its solubility is negligible.

IIIrd Group

TRACE ELEMENTS :

In the case of trace elements most soils contain enough for the plant, but in certain circumstances deficiencies occur. Iron on very alkaline soils is insoluble and as it is essential for the production of chlorophyl,

deficiency results in the chlorosis of the leaves. It can be rectified by spraying the leaves with 'Sequestrene'.

Chlorosis in Brassicas can be due to deficiency of both maganese or magnesium. Boron deficiency, often occuring on light calcareous soils is responsible for brown heart of Cauliflower. It can be rectified by applying borax to the soil. Zinc and copper deficiency are unusual.

(D) ORGANIC MANURE

Most of the deficiencies are fulfilled by organic manure, which contains all the plant foods necessary. Well rotted farm yard manure from cows and pigs is by far the best organic food, but is scrare now. Poultry manure, which is rich in soluble nitrogen salts is excellent either applied to the soil (not to the growing crop for fear of damage) or composed with straw.

There are many good substitute for animal manure for use in generous quantities e.g. fallen leaves, seaweed, etc. The rough organic matter gradually breaks down to form humans, as essential ingredient for building up a rich soil structure which artificial fertilizers alone do not provide.

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CHAPTER - II

PRODUCTION AND SUPPLY

PRODUCTION AND CAPACITY

Nitrogenous

The total capacity of Nitrogenous Fertilizer Industry in Private & Public Sector shown in the Table.

LICENSED CAPACITY AND PRODUCTION OF NITRIGENOUS AND COMPLEX FERTILIZERS FACTORYWISE & PRODUCTION

Name of Factory	Sector	End Product			1000 Tonnes capacity / production	
		Product	Capacity	Production 1980-81 Apr/Mar	N	P_2O_5
IN PRODUCTION						
1. C.E.L. Vizag (A.P.)	Pvt.	Urea	-	-	84.6 (60.6)	104.0 (72.3)
		N,PN/PKS				
		28-28-0	251.0	176.0		
		14.35.14	96.5	52.9		
		18-46-0				
2. E.I.D. Parry (India) Cannore	Pvt.	APS				
		16-20-0	51.5	49.4	16.0 (8)	10.3 (10)
3. F.A.C.T., Alwaye	Pub.	AS	38.8			
		AS	198.0	105.0	82.0 (41)	36.2 (20)
		APS				
		20-20-0	49.0	36.5		
		16-20-0	132.0	61-5		
		A/CI	24.8	10.2		
4. F.A.C.T. (Cochin-Phase I) Kerala	Pub	Urea	330.0	246.0	152.0	-
5. F.A.C.T., Ambalamedu (Cochin-Phase II) Kerala	Pub	NP/NPKS			40.0 (15)	114.0 (50)
		17-17-17)		115.4		
		28-28-0)	485.9	45.9		
		18-46-0)		36.7		
6. F.C.I.	Pub.					
a. Gorakhpur (UP)		Urea	244.9	130.1	131.0 (60)	-
b. Sindri (Bihar)		AS	320.0	6.2	219.0 (23)	- (-)
c. Ramagundam (A.P.)		Urea	495.0	57.9	228.0 (27)	- (-)
d. Talchar (Orissa)		Urea	495.0	14.2	228.0 (7)	- (-)
7. G.S.F.C. (Gujrat)	Pvt.	Urea	364.0	259.5	236.0 (173)	50.0 (43)
		AS	240.0	193.1		
		DA) +8-46-0	108.0	93.2		

8. Hari Fertilizers Varanasi (U.P.)	Pub.	A/CI	41.0	6.2	10.0	-
9. H.F.C.L.	Pub					
a. Barauni (Bihar)		Urea	330.0	101.3	152.0 (47)	-
b. Durgapur (W.B.)		Urea	330.0	76.3	152.0	-
c. Namrah (Assam)		Urea	385.0	36.5	197.0	-
		AS	100.0	41.5	(25)	(-)
10. I.E.L. (Kanpur) U.P.)	Pvt.	Urea	675.0	284.0	307.0 (131)	- (-)
11. I.F.F.C.O.	Coop.					
a. Kandla/Kalol (Guj)		Urea	392.0			
		NP/NPKS				
		10-26-26		122.8		
		12-32-16	890.0			
		14-36-12		498.7		
b. Phulpur (U.P.)		Urea	495.0	22.1	228.0 (10)	- (-)
12. Kothari	Pvt.	A/CI	20.0	3.2	5.2 (1)	- (-)
13. M.F.L., Manali (Tamilnadu)	Pub.	Urea	210.0	148.9	176.0 (164)	112.0 (104)
		NP/NPKS				
		17-17-7		462.1		
		14-28-14		60.9		
		28-28-0		-		
		18-36-0	360.0	-		
		11-22-22		-		
		24-24-24		34.9		
		18-46-0		-		
14. M.C.F.L., Mangalore (Karnataka)	Pvt.	Urea	340.9	182.0	156.0 (84)	- (-)
15. N.F.L.	Pub.					
a. Bhatinda		Urea	511.5	217.6	235.0 (100)	- (-)
b. Nangal (Punjab)		CAN25%N	320.0	204.3	232.0 (123)	- (-)
		Urea	33.0	156.0		
( ) Panipat		Urea	511.5	148.3	235.0 (68)	- (-)
16. N.L.C., Mayveli (Tamilnadu)	Pub.	Urea	154.0	134.2	70.0 (62)	- (-)

17. R.C.F.L., Trombay (Maharashtra)	Pub.	Urea	99.0	101.2		
		Nitrophos-phate 15-15-15	300.0	263.3	165.0 (137)	120.0 (91)
		Ammonium Nitrophos-phate 20-7-20-7@0	361.0	247.8		
18. S.A.I.L.	Pub.					
a. Bhilai (M.P.)		AS	32.6	28.7	6.7	-
b. Bukaro (Bihar)		AS	36.3	21.7	7.5 (5)	- (-)
c. Durgapur		AS	21.2	10.4	4.4	-
d. I.I.S.O. Burnpur Kalti (W.B.)		AS	23.0	5.2	4.7	-
e. Rourkela (Orissa)		AS	28.2	11.9	5.8	-
f. Rourkela (Orissa) (Fort Plant)		CAN(25%N)	48.0	143.1	120.0 (36)	- (-)
19. G.F.C., Kota (Raj)	Pvt.	Urea	330.0	254.3	152.0 (117)	- (-)
20. S.P.I.C., Tuticorin (Tamilnadu)	Pvt.	Urea	512.0	401.0	258.0 (207)	83.0 (58)
		NP/NPKS 18-46-0	160.0	125.0		
		10-26-26				
		15-15-15				
		28-28-0				
21. T.I.S.C.O.Jamshedpur (Bihar)	Pvt.	AS	23.1	15.4	4.8 (3)	- (-)
22. Z.A.C.L., Sun-Cola	Pvt.	Urea	340.0	81.1	171.0 (43)	42.0 (8)
		NP/NPKS 28-28-0	150.0	Nrg. 25.3		
		19-19-0				
		18-46-0		8.6		
		14-35-14				
		SSP/TSP/Pelfors		-	-	598.2
		Sectorwise Capacity				
		Public				195.8
		Private			2831.1	688.7
		Coop.			1399.8	571.0
		Total Capacity				
		Production			493.0	252.0
		Capacity			4735.9	1511.7
		Utilisation			2163.9	851.5
		(Percent)			(53)	(65)

II. UNDER IMPLEMENTATION

1- G.N.U.P.C., Bharonch (Gujrat)	Pvt.	Urea	594.0	273.0	-	-
2. H.F.C.L. Haldia(W.B.)	Pub.	Urea	167.0	152.0	75.0	-
		Nitrophos-phate				
— —	—	20-20-0	375.0			
3. KRIBHDD, Hazira	Coop.	Urea	363.0x4	345.0x2	-	-
4. R.C.F.L.	Pub.					
a. Thalvaishet						
(Maharashtra)		Urea	495.0x3	345.0x2	-	-
		Ammonium Chloride	66.0	15.5	-	-
		Urea	330.0	152.0	-	-
b. Trombay (Maharashtra)		Urea	495.0x3	345.0x2	-	-
5. Tuticorin Alkali Chemical & Fertili-zers, Tuticorin (Tamilnadu)	Pvt.	Urea	330.0	152.0	-	-
		Ammonium chloride	66.0	15.5	-	-

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ALL INDIA PRODUCTION OF NITROGENOUS FERTILIZERS

(1951-52 to 1980-81 - April-March : in 1000tonnes)

YEAR	Ammonium Sulphate 20.6% N	Ammonium Sulphate Niterate 26% N	Urea 46% N	Calcium ammonium Niterate 25% N	Ammonium chloride (25% N)	TOTAL
1951-52	140.3	-	-	-	-	28.9
1952-53	257.9	-	-	-	-	53.1
1953-54	256.8	-	-	-	-	52.9
1954-55	332.4	-	-	-	-	68.5
1955-56	373.1	-	-	-	-	76.9
1956-57	382.5	-	-	-	-	78.8
1957-58	393.9	-	-	-	-	81.1
1958-59	392.1	-	-	-	-	80.8
1959-60	367.0	21.3	3.8	-	3.4	83.7
1960-61	399.0	40.0	11.8	51.3[b]	10.3	110.9
1961-62	402.3	53.2	13.5	228.1[b]	11.2	152.2
1962-63	422.2	62.2	18.7	381.7[b]	10.6	192.7
1963-64	426.0	47.2	19.1	498.1[b]	14.3	214.6
1964-65	474.4	47.8	17.9	555.6[b]	11.9	235.3
1965-66	449.4	52.3	27.5	503.1[b]	16.4	226.9
1966-67	438.4	60.0	141.0	540.9[b]	14.5	285.3
1967-68	498.6	60.9	290.9	337.8[b]	15.4	374.0
1968-69	575.3	49.2	473.2	180.0[b]	17.2	479.9
1969-70	581.8	42.8	828.6	3.0[b]	12.9	625.3
1970-71	612.3	41.8	1996.2	317.2	22.1	725.6
1971-72	599.1	30.4	1236.1	411.5	18.4	807.4
1972-73	554.6	57.5	1417.7	419.3	13.9	886.7
1973-74	574.6	48.7	1406.8	431.3	13.7	889.4
1974-75	589.4	26.7	1734.3	406.5	10.2	1030.1
1975-76	611.1	21.3	2196.7	617.5	15.5	1300.0
1976-77	586.5	2.0	2875.3	638.2	17.6	1608.8
1977-78	557.3	-	3071.8	509.3	16.7	1659.3
1978-79	508.6	-	3306.0	558.8	17.9	1769.8
1979-80	479.3	-	3513.5	465.3	12.7	1834.5
1980-81	436.2	-	3384.2	347.4	18.9	1758.7

A - For agricultural purposes only

b - This figure is for 20.5% N Grade.

ALL INDIA PRODUCTION OF N & P_2O_5

(1951-52 TO 1980-81 in 1000 Tonnes)

Year	Through straight N	Through NP/NPKS	TOTAL*	Through straight P_2O_5	Through NP/NPKS	TOTAL
1951-52	28.9	-	28.9	9.8	-	9.8
1952-53	53.1	-	53.1	7.4	-	7.4
1953-54	52.9	-	52.9	13.8	-	13.8
1954-55	68.5	-	68.5	14.3	-	14.3
1955-56	76.9	-	76.9	12.4	-	12.4
1956-57	78.8	-	78.8	17.6	-	17.6
1957-58	81.1	-	81.1	25.8	-	25.8
1958-59	80.8	-	80.8	31.0	-	31.0
1959-60	83.7	-	83.7	51.4	-	51.4
1960-61	110.9	1.1	112.0	52.4	1.3	53.7
1961-62	152.2	2.1	154.3	62.8	2.6	65.4
1962-63	192.7	1.5	194.2	86.5	1.8	88.3
1963-64	214.6	4.5	219.1	103.1	4.7	107.8
1964-65	235.3	7.9	243.2	121.2	9.8	131.0
1965-66	226.9	11.0	237.9	106.2	12.6	118.8
1966-67	285.3	23.7	309.0	121.0	4.7	125.7
1967-68	374.0	28.6	402.6	157.7	9.8	167.5
1968-69	479.9	83.1	563.0	110.7	12.6	123.3
1969-70	625.3	105.3	730.6	103.2	24.7	127.9
1970-71	725.6	106.9	832.5	102.2	49.4	151.6
1971-72	807.4	141.8	949.2	127.6	102.5	230.1
1972-73	886.7	167.8	1054.5	127.3	120.5	247.8
1973-74	889.4	160.5	1049.9	126.9	125.9	251.8
1974-75	1030.1	156.5	1186.6	134.9	162.7	297.6
1975-76	1300.0	208.0	1508.0	75.0	203.0	278.0
1976-77	1608.8	253.6	1862.4	127.0	197.6	324.6
1977-78	1659.3	340.5	1999.8	161.3	196.3	357.6
1978-79	1769.8	403.2	2173.9	186.8	244.7	431.5
1979-80	1834.5	389.8	2224.3	178.0	351.3	529.3
1980-81	1758.7	405.2	2163.9	196.7	508.6	705.3

(*) Excludes N meant for non-agricultural purposes.

NOTE : Entire requirements of K_2O is met through imports.

Source : Fertilizers Statistics.

PHOSPATIC

The total capacity of Phospatic Fertilizer Industry in Private & Public Sector shown in the table.

LICENSED CAPACITY AND PRODUCTION OF PHOSPHATIC FERTILIZERS

FACTORY WISE

Name of the Factory	Productwise Sector	(As on October 1, 1981) END PRODUCT		000 Tonnes P_2O_5	
		Capacity	Production 1980-81 April/March	Capacity	Productic 1980-81 April/Ma
IN PRODUCTION					
A - Single Superphosphate (16% W.S. P_2O_5)					
1. Adarsh Chemicals Fertilizers, Gujrat	Pvt.	70.0	50.6	11.2	8.1
2. Andhra Fertilizers, (A.P.)	Pvt.	50.0	27.8	8.0	4.4
3. Andhra Sugars, (A.P.)	Pvt.	33.5	13.5	5.4	2.2
4. Anil Starch Products, Gujrat	Pvt.	33.5	16.1	5.4	2.6
5. Anish Chemicals, Gujrat	Pvt.	9.0	3.0	1.4	0.5
6. Bharat Fertilizers Industries, Maharashtra	Pvt.	66.6	46.7	10.6	7.5
7. Bharat Alumns & Chemicals, Rajasthan	Pvt.	66.0	46.7	10.6	7.5
8. Bihar State Superphophate Factory Sindri Industries, Bihar	Pub.	23.5	6.0	3.8	1.0
9. Chamundi Chemicals, Karnataka	Pub.	40.6	-	6.5	-
0. Chemical Unit of Associated Industries, Assam	Pub.	33.5	3.2	5.4	0.5
1. Coimbatore Pioneer Fertilizers, Tamilnadu	Pvt.	40.6	18.6	6.5	3.0

12. D.C.M. Chemical Works, Delhi	Pvt.	144.0	122.7	23.0	19.7
13. Dharamsi Morarji Chemical Co. Maharashtra	Pvt.	146.3	169.3	23.4	27.1
14. Dharamsi Morarji Chemicals, Madhra Pradesh	Pvt.	161.0	100.7	25.8	16.1
15. E.I.D. Parry(India), Tamilnadu	Pvt.	50.0	44.8	8.0	7.2
16. Fertilizers &Chemicals,Travancore, Kerala	Pub.	44.7	10.9	7.2	1.7
17. Gammon Fertilizers & Chemicals, Karnataka	Pvt.	9.0	1.1	1.4	0.2
18. Girraj Fertilizers & Chemicals, U.P.	Pvt.	-	23.8	-	3.8
19. Hindustan Copper Ltd. Rajasthan	Pub.	72.6	22.1	10.2	3.4
20. Hindustan Zinc, Rajasthan	Pub.	41.9	12.4	6.7	2.0
21. Hyderabad Chemicals & Fertilizers, (A.P.)	Pub.	57.4	49.3	9.2	7.9
22. Jayshree Chemicals & Fertilizers, (W.B.)	Pvt.	3.6	0.5	0.6	0.0
23. Khicha Industries, Rajasthan	Pvt.	44.7	32.9	7.2	5.3
24. Kothari Industries, Rajasthan	Pvt.	50.8	9.4	8.1	1.5
25. Krishna Industries Corpn; (A.P.)	Pvt.	16.5	1.6	2.6	0.2
26. Liberty Pesticides & Fertilizers, Rajasthan	Pvt.	26.4	15.6	4.2	2.5
27. Madhuvan Chemicals & Fertilizers, Rajasthan	Pvt.	5.0	0.2	0.8	0.0
28. Maharana Kabanji Udhyog, Rajasthan	Pvt.	45.0	20.4	7.2	3.3
29. Maharashtra Agro Industries, Maharashtra	Pub.	66.6	-	10.6	-
30. Multitech. International, Haryana	Pvt.	3.0	0.3	0.5	0.0

31. Noble Chemicals, Maharashtra	Pvt.	33.5	19.5	5.4	3.1
32. Pauspak Limited, Gujrat	Pvt.	61.0	41.4	9.8	6.6
33. Phosphate Company, West Bengal	Pvt.	40.6	-	6.5	-
34. Premier Fertilizers, Tamilnadu	Pvt.	8.3	0.6	1.3	0.1
35. Rallis India, Uttar Pradesh	Pvt.	61.0	44.8	9.8	7.2
36. Rama Krishi Rasayan , Maharashtra	Pvt.	33.5	47.0	5.4	7.5
37. Shaw Wallace & Co., Tamilnadu	Pvt.	75.5	59.0	12.2	9.4
38. ShivalikFertilizers, Punjab	Pvt.	66.0	14.7	10.6	2.4
39. Udaipur Chemicals & Fertilizers, Rajasthan	Pvt.	0.3	3.7	1.3	0.6
40. Viraj Chemicals, Gujrat	Pvt.	2.2	1.2	0.3	0.2
41. Western Chemicals Industries, Maharashtra	Pvt.	3.4	1.8	0.5	0.3
	Total S.S.P.	1836.9	1100.9	229.9	176.1
B. Triple Superphosphate					
1. Dharamsi Morarji Chemical Co. Maharashtra	Pvt.	27.0	1.2	12.2	0.6
2. Hindustan Copper, Rajasthan	Pub.	300.0	4.0	90.0	1.8
3. Fertilizers Corporation of India, Bihar	Pub.	340.0	38.3	150.0	19.6
	Total S.S.P.	567.0	43.5	252.5	20.0

C. Pelofas					
1. Orissa Fertilizers & Chemicals, Orissa	Pvt.	45.0	-	7.6	-
D. Phosphoric Acid					
1. Hindustan Lever, West Bengal	Pvt.	-	-	19.5	-
2. Hindustan Zinc, Rajasthan	Pub.	-	-	26.0	-
	Total H_3PO_4			45.5	
UNDER IMPLEMENTATION					
A. Single Superphosphate(16% W.S. P_2O_5)					
1. Adarsh Chemicals & Fertilizers, Rajasthan	Pvt.	66.0	-	10.6	-
2. Madhuvan Chemicals & Fertilizers, Rajasthan	Pvt.	39.6	-	6.3	-
3. Rallis India, Uttar Pradesh	Pvt.	66.0		10.6	-
	Total II	171.6	-	27.5	
III. APPROVED IN PRINCIPLE					
A. Single Superphosphate (16% W.S. P_2O_5)					
1. Agricultural Sales Corporation, Punjab	Pvt.	66.0	-	10.6	-
2. D.C.M. Chemicals Works, Punjab	Pvt.	72.0	-	11.5	-
3. Haryana Industrail Dev. Corpn. Haryana	Pub.	66.0	-	10.6	-
4. Industrial Suppliers & Services, Rajasthan	Pvt.	66.0	-	10.6	
5. Jayshree Chemicals & Fertilizers, W.B.	Pvt.	66.0	-	10.6	

A. Single Superphosphate (16% W.S. P_2O_5)

6. Prem Chand Arya, Uttar Pradesh	Pvt.	66.0	-	10.6
7. Punjab State Industrial Dev. Corpn. Punjab	Pub.	66.0	-	10.6
8. Varinder Agro Chemicals, Punjab	Pvt.	66.0	-	10.6
	Total III	534.0	-	85.7

IV. UNDER CONSIDERATION

A. Triple Superphosphate

1. Haryana State Industrial Dev. Corpn. Haryana	Pub.	55.0	-	25.3
2. Rajasthan Project, Rajasthan	Pub.	435.0	-	200.0
	Total IV	490.0	-	225.3
	GRAND TOTAL (I,II,III & IV)			936.4

rce : Fertilizer Statistics, 1981.

ALL INDIA PRODUCTION OF PHOSPHATE

(1951-52 to 1980-81 April-March in 1000 Tonnes)

Year	Single Superphosphate and pelofos material of grade.		Nutrients W.S. P_2O_5	Triple superphosphate material of grade.		Total Nutrients P_2O_5 straight.
	16% W.S. P_2O_5	Superphosphate other grades		46% W.S. P_2O_5	Nutrient W.S. P_2O_5	
1951-52	61.3	-	9.8	-	-	9.8
1952-53	46.5	-	7.4	-	-	7.4
1953-54	86.4	-	13.8	-	-	13.8
1954-55	89.7	-	14.3	-	-	14.3
1955-56	77.3	-	12.4	-	-	12.4
1956-57	109.9	-	17.6	-	-	17.6
1957-58	161.2	-	25.8	-	-	25.8
1958-59	193.7	-	31.0	-	-	31.0
1959-60	323.3	-	51.4	-	-	51.4
1960-61	327.4	-	52.4	-	-	52.4
1961-62	392.0	-	62.7	-	-	62.7
1962-63	540.5	-	86.5	-	-	86.5
1963-64	637.4	6.1	103.1	-	-	103.1
1964-65	745.3	10.6	121.2	-	-	121.2
1965-66	664.1	-	106.2	-	-	106.2
1966-67	747.3	24.2	121.0	-	-	121.0
1967-68	949.1	31.3	157.5	0.6	0.2	157.7
1968-69	664.5	14.7	108.9	4.1	1.8	110.7
1969-70	609.4	12.4	99.8	7.5	3.4	103.2
1970-71	613.0	7.9	99.5	5.8	2.6	102.1
1971-72	773.0	2.6	124.2	7.7	3.5	127.6
1972-73	781.9	-	125.1	4.9	2.2	127.3
1973-74	773.3(10.0)	0.4	125.5	3.0	1.4	126.9
1974-75	822.8(12.3)	-	133.8	2.5	1.2	135.0
1975-76	461.3(1.6)	1.6	74.0	2.1	1.0	75.0
1976-77	779.3(1.8)	7.0	126.2	1.8	0.8	127.0
1977-78	987.6	-	158.0	7.2	3.3	161.3
1978-79	1081.3(34.5)	34.5+	177.8	19.6	9.0	186.8
1979-80	1033.1(16.8)	16.8+	167.7	22.4	10.2	178.0
1980-81	1085.0(22.1)	22.1+	176.7	43.5	20.0	196.7

IMPORT OF FERTILIZERS

The Table given below shows the Import of different kind of Fertilizers. The countries from which Imports were made are U.S.S.R., Itly, West Germany, Canada, Saudi Arabia, Bulgaria, Japan, Kuwait, U.S.A., Belgium etc.

Year	N	P_2O_5	K_2O	Value
1967-68	866.7	348.7	270.2	1933.1
1968-69	844.1	137.6	213.2	1629.2
1969-70	667.2	94.1	120.4	1167.7
1970-71	477.3	32.4	199.8	767.9
1971-72	481.3	247.8	268.2	899.7
1972-73	665.4	204.7	325.3	1212.6
1973-74	658.8	212.7	370.4	1767.5
1974-75	883.8	285.9	437.3	5991.3
1975-76	996.0	361.0	278.0	7277.2
1976-77	750.1	22.8	277.8	2202.2
1977-78	758.1	163.9	598.9	3064.4
1978-79	1233.1	243.5	517.4	4600.2
1979-80	1295.3	237.1	473.4	5545.0
1980-81	1510.4	452.1	796.5	9252.0

Source : Fertilizer statistics 1981.

ALL INDIA CONSUMPTION OF NP_5O_2 AND K_2O.

YEAR	N	P_2O_5	K_2O	Total $N+P_2O_5+K_2O$
1951-52	58.7	6.9	-	65.6
1952-53	57.8	4.3	3.3	65.7
1953-54	89.3	8.3	7.5	105.0
1954-55	94.8	15.0	11.1	120.9
1955-56	107.5	13.0	10.3	130.8
1956-57	123.1	15.9	14.8	153.7
1957-58	149.0	21.9	12.8	183.7
1958-59	172.0	29.5	22.4	223.8
1959-60	229.3	53.9	21.3	304.6
1960-61	211.7	53.1	29.0	239.9
1961-62	249.8	60.5	28.0	338.3
1962-63	333.0	82.8	36.4	452.2
1963-64	376.8	116.5	50.6	543.9
1964-65	555.2	148.7	69.3	773.2
1965-66	574.8	132.5	77.3	784.6
1966-67	737.8	248.8	114.2	1100.6
1967-68	1034.6	334.8	169.6	1539.0
1968-69	1208.6	382.1	170.0	1760.7
1969-70	1356.0	416.0	210.0	1982.4
1970-71	1479.0	541.0	236.3	2256.0
1971-72	1768.0	558.2	300.6	2656.9
1972-73	1839.0	581.3	347.6	2767.9
1973-74	1829.0	649.7	359.8	2838.6
1974-75	1765.7	471.5	336.1	2573.3
1975-76	2148.6	466.8	278.3	2893.7
1976-77	2456.9	634.9	318.2	3410.9
1977-78	2913.0	866.6	506.2	4285.8
1978-79	3419.5	1106.0	591.5	5115.9
1979-80	3498.1	1150.9	606.4	5255.4
1980-81	3678.1	1213.6	623.9	5515.6

CHAPTER - III

DEFINITION OF COOPERATIVE MARKETING

DEFINITION OF COOPERATIVE MARKETING

A marketing cooperative is a voluntary business organisation which is formed for collective purchase and sale. "Cooperative marketing means working together for mutual benefit in solving marketing problems --- cooperative marketing organisations are business enterprises". Prof. H.H. Bakken and Dr. M.A. Schaars have greatly emphasised the commercial aspect of the organisation". A cooperative sales association is a voluntary business organisation established for the purpose of collective marketing. Such association is owned and operated by member patrons for their direct benefit. Its immediate purpose is to obtain for its member the highest farm price; its ultimate aim is to elevate the plan of living on farms. Cooperation in marketing is a business undertaking amenable to the economic forces but not to all the traditions, codes and practices which effect private commercial enterprise". Dr. J.P. Niyogi has explained the aim of the cooperative marketing in the following words :

"The aim of cooperative marketing societies is to establise marketing conditions by means of orderly and regulated supply of commodities --- cooperative societies work through laws of supply and demand. They do not seek to eleminate the operation of such forces, but merely help in the better adjustment of supply of demand over a given period of time".

Politicians have looked upon cooperation as a 'Modus Operandi' of this own philosophies. Some believe that cooperation can give a sound footing to capitalism by eleminating its excesses. Others hold that cooperation is a peaceful and silent method of establishing sociolism. There are a few who feel that a cooperative commonwealth cannot only knock out fascism but it can't also arrest the march of communism and in this way it can save a nation from the excesses of the two extremes.

Bakken and Schaars have carefully examined the distinction between cooperatism and other political theories in the following words - "Cooperatism is not sociolism, communism, fascism or capitalism. Cooperatism can be described as a synthesis of several plans of economic organisation in some ways it resembless laissez, fair capitalism can be described as a synthesis of several plans of economic organisation in some ways it resembless laissez fair capitalism and to some extent sociolism, but it differs from both of these sufficiently to make it a distinct and independent system. It is distinguished from these other systems by its objectives and principles rather than by its operating methods. It is not "just another business". Like the capitalistic organisation in America, it operates under the principles of lassiez faire in which competition and Govêrnment regulations are relied upon, and like the sociolistic organisation it abolishes the profit

motive and espires to give to the members of a larger share of the consumer's price. The changes it make in the ordinary types of corporate organisation are in conformity with its economic objectives. Cooperatism modifies the extremes of capitalism, fascism and sociolism. It occupies in many respects a middle course and is neither conservative nor radical. It is liberal movement, practical in application and idealistic in purpose.

The tiller of the soil can improve his lot and his business by organising a cooperative. The main concern of a farmer is to purchase his requirments at the lowest price and to sell his produce at the highest price. Under competitive conditions, he will not be able to doso if he has no organisation. Under monopolistic conditions, though there maybe economy in production there is no certainity that the farmer would get a higher price for his produce or that the farmer would get a higher price for his produce, there is no certainity or that the consumer would get commodities at lower price. Experience of the recent war bears testimony to the fact that under Government regulations of business, private enterprise places great obstacles in the way of proper distribution of essential commodities due to which the interests of both the producers and consumers suffer. During the war there were ennumerable evasions of the Government regulations regarding the supply of essential commodities. Black marketing and profiteering were rampant. Though on principle, Government

regulation can go a long way to solve the problems, the producers and the consumers looked askance at it and condemned it out right. The prime necessity, therefore, it to develop a system by which the producers may acquire a better bargaining capacity and the consumers may reap the fruits of collective purchase. A cooperative society is the best organisation for the purpose. It is highly suitable for the distribution of essential commodities and can enable the Government to stump out black marketing.

OBJECTS OF COOPERATIVE MARKETING

The primary object of a marketing cooperative is to secure a just return to the producer and a fair treatment to the consumer. It tries to harmonize production and consumption and to make a better adjustment between supply and demand. It can work successfully within the frame work of a cooperative system and can do away with its defects.

Then collective bargaining enables the members to get a fair deal in the market. Both the consumers and the producers are able to purchase and sell at favourable prices. The middle men's profit is considerably reduced.

Besides, a cooperative marketing society does not aim at eleminating middlemen's services. Middlemen may go with the cooperatives. A cooperative organisation, in fact, tries to lower the cost of production and eleminate waste.

Moreover, an ordinary cultivator has no means of obtaining relevant market information. A marketing cooperative undertakes the work of dissemination of market information which creates informed and they try to understand the market conditions.

Again the cooperatives aim at the extension of markets and an enhancement of marketing efficiency. They grade the produce of the members according to certain standards. That is why they are able to command a good sale in distant markets. Proper arrangements are made for the advertisement of their products. They are able to establish business contacts with similar cooperative elsewhere. In foreign countries too they can have a good business.

Yet again, a marketing cooperative is expected to make provision for adequate storage facilities. Such facilities would give a greater waiting capacity to the members. Then the, produce can be disposed off in a favourable market. Meanwhile the cooperative may make a part payment to the members on the security of the produce stored.

In addition to this, the agricultural marketing cooperative can make a substantial contribution to agricultural improvements. They can bring about an improvement in the technique of agricultural production and can easily help the farmers to take advantage of the research work in that line.

Also the cooperative can take up the development work in the villages and can make provision for transport facilities.

Finally, the cooperative sale societies can coordinate their business with credit societies and consumer's stores. Their linking with the consumer's stores would bridge the gulf between the producers and the consumers. The unnecessary middlemen would be allowed out and their profits would be shared between the producers and the consumers. If the sale goes with credit, the farmers would be in a position to make punctual repayment of their loans. A credit society may advance loan to a farmer, while a sale society may realise that amount out of his sale proceeds and maymake thepayment direct to the credit society. Thus the repayment of the loans would be in time.

In short, a marketing cooperative tries to create a spirit of mutual help among the producers and the consumers and to make purchase and sale more smooth.

THE ESSENTIAL PRE-REQUISITS

Before the setting up of a cooperative marketing society, it is necessary to create certain conditions favourable for its success. The following are the essential pre-requisites for the organisation of a marketing cooperative.

(a) The object of the organisation should be definite;

(b) There should be a sufficient volume of business. For instance, the producers should produce large quantities of commodities which they wish to sell collectively;

(c) There should be somebody to lead. So far as possible, the leader should be from amongst the members;

(d) The members should appreciate the need for a cooperative enterprise;

(e) The members should understand the principles of cooperation. Theyshould pledge their loyalty to the marketing cooperatives.

(f) It should be decided in the biginning whether the cooperative shall deal with one commodity or a number of commodities;

(g) The relationship between a sale society, a credit society and a consumer's store should be decided upon at the very outset.

Then, the following information should be gathered :

(a) Is there any monopoly of production or sale of the commodity tobe handled? If so, a cooperative should be organised very cautiously;

(b) Is there free competition in the market? A cooperative can work successfully under competitive conditions;

(c) Is there a considerable difference between the price paid by a consumer and the price received by a producer? The greater the difference, the greater is the need for an organisation;

(d) Are the middlemen very strong? Are they doing honest service? A cooperative can easily stand against strong and dishonest middlemen.

(e) Will it be remunerative to have a marketing society? What will be the contribution of such an organisation?

If replies to these questions are satisfactory, efforts should be made to secure adequate capital and to set up a marketing cooperative.

FINANCIAL POLICY

The followings are the different sources from which a marketing cooperative draw upon for money to meet its expenditure :

(a) Share capital;

(b) Loans;

(c) Deposits;

(d) Securities;

(e) Reserve and other funds;

(f) Receipt from sale of goods;

(g) Profit; and

(h) Government Grants.

A marketing society should adopt a policy of progressive development of its financial resources. In the beginning, it mayhave to face considerably financial hardles and may have to seek Government help, but ultimately it should stand on its own

legs. The members may be asked to make full payment of the value of their shares. Small savings should be encouraged so that the deposits may go up. If necessary, loans maybe taken from the higher cooperative agencies. In days of prosperity, the marketing cooperative should build strong reserves.

PRICE POLICY

A marketing cooperative should not sell goods on credit. All transactions should be in cash.

Goods should be sold at the market price. If a consumer's store sells commodities at a lower price, it would create trouble for itself. The dividents, however should be distributed in order to give them an incentive to purchase from the store.

A marketing cooperative may like to sell the produce of the members in a favourable market after holding it for some time. Under such conditions, it should not pay full price to the members. A part time say 75% of the market price may be made immediately after receiving the produce. The balance should be paid after the produce is disposed of in the market. This would cover the risks in price fluctuations. However, the produce should not be held for a long time in order to avoid big risks. It does not mean that a cooperative should take to speculation. The object should be sales over the whole of season in order to obtain the cost price.

POOLING

A cooperative marketing organisation may either sell the produce of a member according to his wishes or pool it with the produce of the other members and dispose it of at a time and in a manner considered suitable by its management. Pooling implies a mingling of the products of many producers for the sake of obtaining a higher return for them.

There are mainly the following two types of Pooling :

(a) Indiscriminating Pooling

The whole of the produce brought by the members is physically mingled and there is no indentity of the lots supplied by the different members. It is only after mixing that the produce is graded according to some established standards. The grading enables a cooperative to getch higher prices in the market. Each member is paid an average sale price irrespective of the quality of the produce that he supplies. This creates a serious problem. A superior producer would not get the benefit of the higher grades of his produce, while an inferior producer would get a premium on his produce of a lower grade. The result would be that the superior producers would either withdraw themselves from the market or take to the production of stuff of a lower quality. This would hamper the production considerably. A marketing cooperative would be the central link as it would be connected with the credit cooperative on one side and the consumer's storer on the other. The loan advanced by a credit society

can be easily realised out of the sale proceeds of a marketing society. Also, a marketing cooperative may sell the goods produced by the members directed to the consumers stores. Such coordination would not lead to a balanced development of the cooperatives, but also to a greater discipline in their dealings and a considerable economy in the business. The producer would get a higher price for his produce and the consumer would get commodities of good quality at fair prices. The profit that now goes toa long chain of middlemen, would be shared by both the producers and the consumers. The producer's cooperatives in the village will come indirect contact with the consumer's cooperatives in the towns and the unnecessary middlemen would be completely eliminated.

FEDERATIONS

A federation is a source of strength to a smaller units and enables them to organise their business on scientific lines. The primary societies should be federated into Marketing Union and the unions should be integerated into a provincial market federation. The federation of different provinces should be linked to an All India Cooperative Marketing Association. A Provincial Federation should come the pivot the cooperative marketing movement and should direct it in the right direction. In a country where the cooperative movement is initiated by the Government and flourishes because of its patronage, federations play an important role.

A marketing federation can help the producer's organisation and the consumer's stores to establish business contacts with each other. Besides it, can afford to employ experts and to develop facilities for research and training. Moreover, the State can give helpto the primary producers through the federation. It is very convenient for the Government to give a lump sum grant to a federation which may be made responsible for its suitable distribution among the small producers. In addition to all this a federation can help a cooperative society financially at the time of need and can save it collaps. The last but not least in importance is the fact that a federation can deal with similar federations in other States and in other countries and thus it may extend the markets.

INFORMATION

The dissemination of market information should be one of the main functions of the cooperatives. A free flow of information is vital to collective action. If there is an obstruction in the transmission of intelligence from one unit to another there may be serious consequences on the whole cooperative organisation. That is why, a market news service should be set up so that the marketing cooperatives may get information regarding the latest methods of production, processing and sale and keep themselves in touch with the movement of prices in the markets.

The knowledge of cooperative principle and market news should radiate from the marketing federations. In fact, a

federation can easily take up the work of advertising the products of the cooperatives. For a small concern, propeganda and advertisement may prove too costly, but this cannot be said of federation.

LIMITATIONS

The members sometimes expect too much from the marketing cooperatives. They should not ignore the limitations of such organisation.

A marketing society cannot fix prices arbitrarily. It has got to keep in view the market conditions. A cooperative is not a monopoly. It its just an organisation to secure a fairdeal for the members bymeans of collective bargaining.

A cooperative marketing organisation cannot eliminate the middlemen altogether. It can however, bring their charges by creating a healthier atmosphere in the market.

Cooperative marketing is not suitable for large scale production. This is because it cannot provide an incentive of profit making. On the other hand it is highly suitable for small producers specially the cultivators and the cottage workers.

The invertia of the masses is another limitations. The illiterate people, who do not understand the principles of cooperation are easily misled by the private dealers and thus theybecome bitterly critical of the marketing cooperatives.

I F F C O

An all India Cooperative Society was registered on November 3, 1967 under the name of Indian Farmers Fertilizer Cooperative Limited (IFFCO) with the purpose of taking up large scale manufacturing and distribution of chemical fertilizers. In the initial formation of the society the following 10 States participated :-

(1) Andhra Pradesh, (2) Gujarat, (3) Haryana, (4) Karnataka, (5) Madhya Pradesh, (6) Maharashtra, (7) Punjab, (8) Rajasthan, (9) Tamilnadu, (10) Uttar Pradesh.

The principle of share participation was that the product is to be shared by the respective State Cooperative System in proportion to their share holding in the society. Subsequent to the initial formation the States of Bihar, West Bengal, Orissa, Kerala, Jammu & Kashmir, Himachal Pradesh and three Union Territories namely Delhi, Chandigarh and Pondichary have also become participants. The Registered Office of the Society is at New Delhi.

CAPITAL OUTLAY

The authorised capital is Rs. 200 crores of which Rs. 84.17 crores is subscribed and Rs. 83.83 crores is paid up. The capital resources of the society as on June 30, 1981 are as follows :

Kandla area November, 1981

Kandla

Phase-I	N.P.K.	January 1, 1975
Phase-II	N.P.K.	September 6, 1981

Phulpur

Ammonia	March 28, 1981
Urea	March 28, 1981

MARKETING SET UP

IFFCO's marketing operations cover sixteen States and three Union Territories. For administrative convenience the marketing area is divided into four Zones with Headquarters at Chandigarh, Allahabad, Ahmedabad & Bangalore. The marketing organisation in each State comprises a State Office at the State capital supported by adequate number of Area Offices. The present number of such Area Offices is 36. IFFCO has employed over 300 persons qualified in Agriculture, mostly graduate and post graduate as Field Representatives. The farmers and cooperatives are approached through them. All extension and marketing activities inthe field centre are around them. The guidance, supervision and control is rendered by the Area Managers and Area Agronomist at area level, State Marketing Manager at State capital and Zonal Agronomist at Zonal level. Sales of IFFCO products are organised almost exclusively through about 21,500 cooperatives sales points in the country. In a few States the society has opened Farmers Service Centres to supply full package of agricultural inputs and services under one roof to the farmers. These have become quite popular with the farmers.

	Rupees in crores	
Equity		
1. Government of India	49.20	
2. Cooperatives	34.63	83.83
Retained Earnings (Provisional)		118.00
Loans	16.67	
Government of India	82.41	
World Bank	11.11	
U.S.A. I.D.A. and other financing institutions	29.11	139.30

As on August 31, 1981 about 20,000 Cooperative Societies were shareholders.

PLANTS

The Kalol Unit consists of an Ammonia Plant with a rated capacity of 910 tonnes per day and an Urea Plant with a rated capacity of 1,200 tonnes per day. Besides a 6 tonnes per day Dry Ice Plant is also in operation at Kalol and a 500 tonnes per day Malathion Plant has also been recently commissioned. The capacity of NPK Plant at Kandla has been increased from 4,15,000 to 8,50,000 tonnes of NPK per annum with the commissioning of the Kandla Plant Expansion. IFFCO's third plant at Phulpur having a capacity of 900 tonnes per day of Urea, plant has gone into regular production from March, 1981. The feed stock for the Phulpur plant is Naptha whereas Kalol Plant have been in commercial operation from the dates shown below :

Kalol

Ammonia	March 1, 1975
Urea	April 1, 1975
Dry Ice	March 28, 1978
Malathion	August 18, 1981

The promotional programmes are designed to educate the farmers on improved farming techniques and the balanced fertilization concept through Field Days, Farmers Meeting, Village Adoption Programme, Crop Seminars, Seed Multiplication Programmes etc.

A cooperative Rural Development Trust (CORDET) established by IFFCO runs Motilal Nehru Farmers Training Institute at Phulpur where the farmers are trained in all aspects of agriculture including dairy, poultry, pesticides etc. The Trust also runs a Soil Testing Laboratory.

The products marketed by IFFCO besides Urea and N.P.K. also include Malathion (Technical), Dry Ice and Ammonia for industrial use.

NEW SCHEMES/PROJECTS

Debottlenecking at Kalol Plant

The debottlenecking scheme at the Kalol Plant involving a number of schemes for improving the efficiency and output is now nearing completion. The Amire Cuard System and Purge Gass Recovery Plant are already in operation. Most of the modifications/additions in different sections of the Ammonia Plant have been implemented and the balance are expected to be completed during the next annual turn around. As a result of the steps already taken the performance of the unit has improved.

Joint Venture Project in Senegal

Based on the approval accorded by the Government of India IFFCO is participating in a Joint Venture Project in Senegal. While IFFCO's contribution to the equity will be about Rs. 8.0 crores the Government of India and S.P.I.C. Tuticorin would also be contributing Rs. 10 crores.

Of the 2,37,600 tonnes P_2O_5 per day expected to be produced in a Senegal Project about 1,10,000 tonnes is expected tobe supplied to India and the balance converted into solid fertilizer to produce more than 2 lacs tonnes per annum of D.A.P. and T.S.P.

PROMOTION OF NEW SOCIETY

IFFCO has promoted a new society Krishak Bharti Cooperative (KRIBHCO) for which it will contribute Rs.100 crores. The KRIBHCO has been entrusted with the task of a major fertilizer installation at Hazira having two ammonia plants of 1350 T.P.D. capacity of each and four Urea plants of 1100 T.P.D. each with all the necessary offsite facilities. Construction of this project is in progress. The total cost of the project is estimated at Rs. 960 crores.

List of District selected by IFFCO for extensive promotional programme :

STATES	District	Per annum per cent increase of fertilizer during 1976-80
GUJARAT		
Irrigated Rainbed	Meshana Ahmedabad	23.1
RAJASTHAN		
Irrigated	Bhilwara & Alwar (IFFCO and N.F.L.)	14.2
Rainbed	Jhalawar	
MAHARASHTRA		
Irrigated	Aurangabad	13.2
MADHYA PRADESH		
Irrigated	Hoshangabad	5.4
Rainbed	Visisha	
HARYANA	Gurgaon (IFFCO & NFL)	16.2
UTTAR PRADESH	Mirzapur & Bahraich	11.4
J & K	Anantnag	22.0
BIHAR	Samastipur	5.7
WEST BENGAL	24 Paragana	16.4
ORISSA	Ganyom Ganjam	2.8
KARNATAKA	Raichur	21.1

NUMBER OF VILLAGES ADOPTED BY IFFCO - ALL INDIA

AS ON 30TH JUNE, 1981.

S.No.	STATE/U.Ts.	No(s) of Villages adopted
1.	ANDHRA PRADESH	11
2.	BIHAR	9
3.	GUJARAT	20
4.	HARYANA & DELHI	20
5.	HIMACHAL PRADESH	-
6.	JAMMU & KASHMIR	2
7.	KARNATAKA	14
8.	KERALA	1
9.	MAHARASHTRA	28
10.	ORISSA	4
11.	PUNJAB	40
12.	RAJASTHAN	19
13.	TAMILNADU	9
14.	UTTAR PRADESH	64
15.	WEST BENGAL	8
	Total (All India)	267

Source IFFCO District level information.

SHARE HOLDING PATTERN OF IFFCO STATES

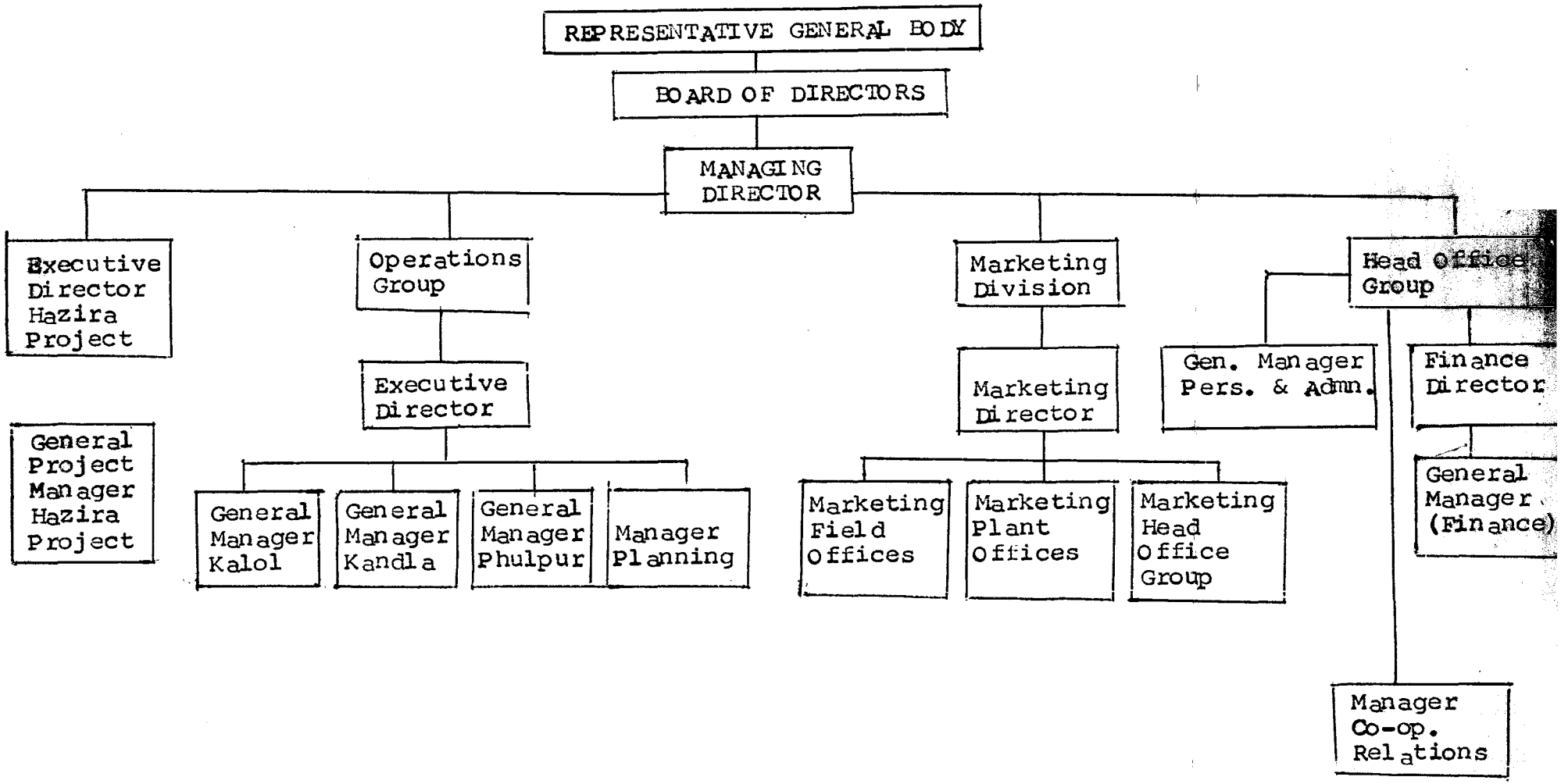
States	Paid up (Rs.)	Percentage to total
ANDHRA PRADESH	77.31	2.2
BIHAR	105.08	3.0
GUJARAT	701.87	20.3
HARYANA	196.22	5.7
HIMACHAL PRADESH	2.64	0.1
JAMMU & KASHMIR	4.33	0.1
KARNATAKA	103.36	3.0
KERALA	1.16	Neg.
MADHYA PRADESH	182.39	5.3
MAHARASHTRA	126.66	3.7
ORISSA	27.14	0.8
PUNJAB	396.85	11.5
PONDICHARY	0.10	Neg.
RAJASTHAN	138.75	4.0
TAMILNADU	71.22	2.1
UTTAR PRADESH	1,191.66	34.5
WEST BENGAL	126.95	3.7
Union Territories		
DELHI	3.48	0.1
CHANDIGARH	0.36	Neg.
G.O.I.	4,920.00	*
N.C.D.C.	5.00	*

(*) Have not been considered for finding out the percentage share.

Neg. = Negligible.

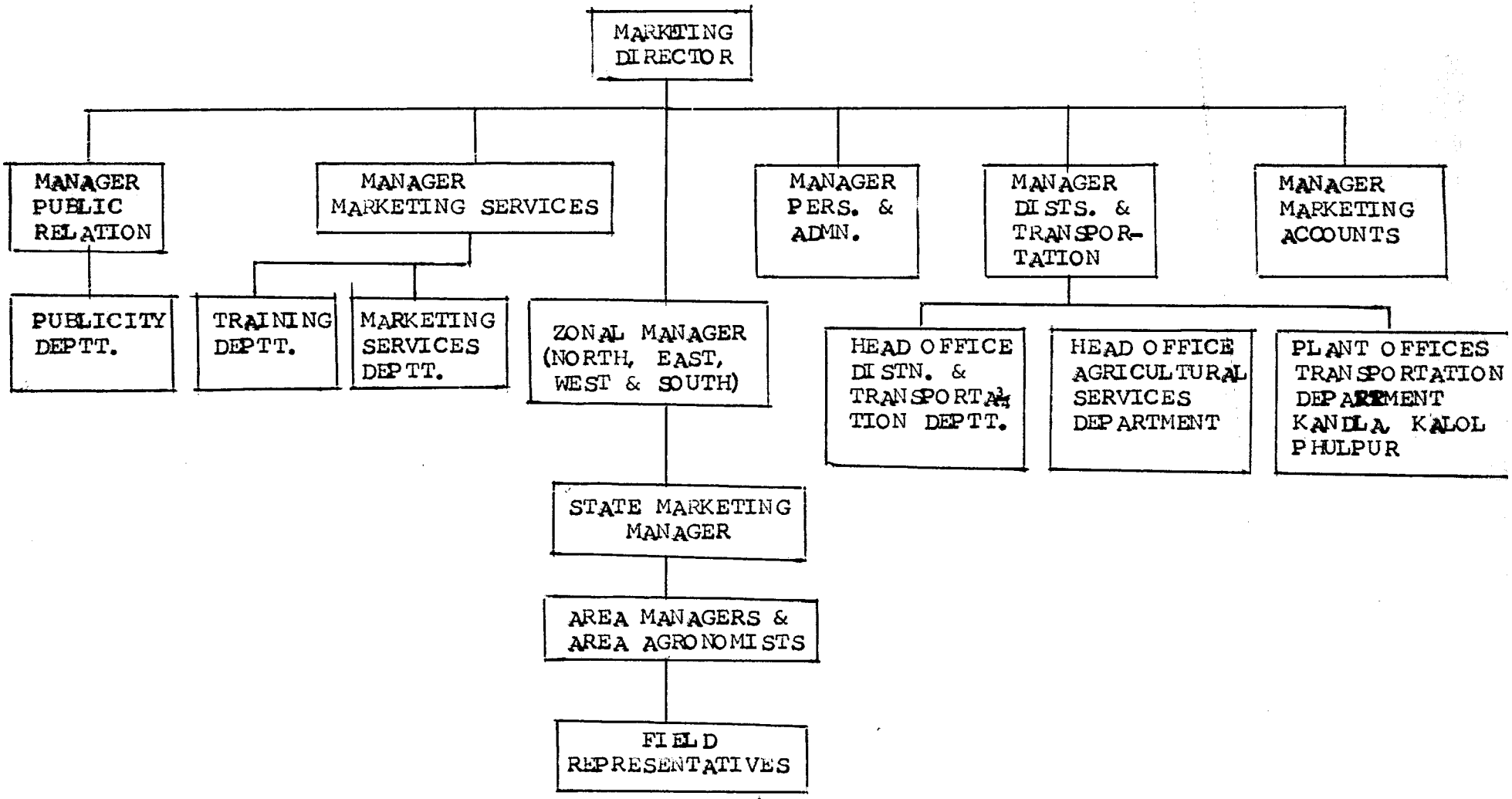
ANNEXURE 1

ORGANISATION CHART IFFCO



ANNEXURE No 2

ORGANISATIONAL SET UP OF MARKETING DIVISION OF IFFCO



MARKETING CHANNELS & MARKET SHARES

MARKETING CHANNELS

At present there are nearly 85 fertilizer manufacturing plants in the country. During the year 1980-81 they produced 6.7 million tonnes of fertilizer material. In addition nearly 5.3 million tonnes were imported bringing the total 12.0 million tonnes. In the coming years even larger volumes of fertilizers are expected to be handled.

1.1 These material will have to be moved to about six hundred thousand villages and made available to million of farmers who are ultimate consumers.

1.2 The responsibility of financing, transporting, storing and making these fertilizers available to the consumers at the right time rests with the distribution channel.

The distributional system presentlyin vogue in the country can be classified into the following three catagories:-

(i) Institutional Agencies

(2) Private Trade

(3) Company owned Retail outlets.

INSTITUTIONAL AGENCIES

The cooperative and the Agro Industries

Corporation are the main institutional agencies handling fertilizers. While the cooperatives were in the business for several decades, the Agro Industries Corporations are relatively now to the field and command only a small percentage of business. They sell fertilizers through their service centres. Some of them employ the educated young entereprenuers who are their dealers. In some States the Agriculture Department also sells fertilizers directly through Government owned outlets.

PRIVATE TRADE

Among the private distributional channels, there are some companies which have specialised in the distribution of fertilizers and other agricultural inputs. M/s. E.I.D. Parry & Company, M/s. Shaw Wallace and M/s. Rallies India Limited come under this catagory. Some of them have also small production or mixing units of their own. Some have share holding interests in fertilizer producing units. These companies have well developed network of dealers and operate as the main marketers for one or more fertilizer producers. There are also other private distributors who act as wholesalers at district or mandi levels. Some private dealers act only as retailers in small towns. The retailers normally get their supplies through big markets or wholesalers. In some cases they also get their supplies direct from the manufacturers. Some manufacturers have appointed franchised dealers also.

COMPANY OWNED OUTLETS

Some companies have opened their own wholesale and retail outlets. For example F.A.C.T. has wholesale outlets. G.S.F.C. and IFFCO have company owned retail outlets where technical guidance on the use of inputs is also available. Most fertilizer manufacturers use only one of the systems or a combination of two or more systems.

ROLE OF COOPERATIVES IN FERTILIZERS MARKETING

The role of cooperatives in supply of the agricultural inputs particularly fertilizers, was recognised in 1945 when the Bengal Famine Commission emphasised this aspect. Thereafter several high policy committee e.g. second Foodgrains Policy Committee (1947), First Five Year Plan (1951), Second Five Year Plan (1956), Agricultural Administration Committee (1958) and the working group on cooperative policy (1959) recommended the distribution of fertilizers, seeds, pesticides and agricultural administration implementation etc. The National Development Council in November, 1958 stressed that cooperatives must make permanent arrangements for the distribution of agricultural inputs in all kinds to the farmers in a significant manner.

(A) The cooperatives are the oldest in the business of the fertilizer distribution in the country. Their objectives are different from those of the traditional merchant class, ensuring equitability in distribution, holding the price line and service to the consumers are

their motto, profit being only secondry. Consequently, the cooperatives operate in all the areas and serve the entire hinterland without minding the cost and even if some operations prove uneconomical. Added to this, as part of the State Policy aimed at the availability of fertilizers in adequate quantities in time and in all seasons, the cooperative or required to hold large stocks of fertilizers at different distribution points involving sizeable expenditure or storage and interest charges.

(B) Prior to 1966 cooperatives were virtually the sole or main agencies for distribution in many States. The Government decision in 1966 to give increasing freedom to indigenous fertilizers to make their own arrangements for distribution of their products in the free market changed the situation. Consequent to their policy decision which encouraged multi agency approach for this activity, the private distribution channels entered into this business on large scale. Besides cooperatives and private trade another institutional agency which has recently entered their activity in the State is Agro Industries Corporations.

(C) The entry of the private trade in fertilizer distribution on a large scale placed the cooperatives at a slightly disadvantegious position because the private distributors mainly concentrate at the rail and roodhead points where the distribution cost are comparatively less. The cooperative system however has withstood this unfair competition and has continued to render unique service to

the agricultural production programme by supplying fertilizers and other inputs in the remotest village as well.

ORGANISATIONAL STRUCTURE

The organisational structure for marketing of fertilizers in the cooperative sector varies from State to State. It is generally a two tier structure in some States and a three tier in others. The Apex Marketing Federation generally function as a cooperative wholesaler in fertilizer business for the State as a whole. There are some exceptions to this rule as in the case in the States of Tamilnadu and Uttar Pradesh. In Tamilnadu in addition to the Apex Marketing Federation, the Tanjore District Cooperative Marketing Cooperation Marketing Federation is also recognised as the wholesaler of the State Company. In Uttar Pradesh, besides the Apex Marketing Federation, in this case Union Federation also functions as a State level wholesaler so far as supplier to come cooperative are concerned. In Gujarat and Punjab the District Cooperative Marketing Societies are involved in the business while in other States, generally speaking the primary marketing societies are at Taluka level act as the sub-wholesalers and the primary agricultural credit/service cooperatives are the retailers at village levels, some of the district and primary marketing societies also run some retail depots at the mandi centres and in the interior areas not covered by village cooperatives.

There has been a substantial increase in the number

of cooperative fertilizers retail depots during 1969-70 to 1980-81. This would be evident from the following table.

Year	Cooperative Fertilizers Depots
1969-70	33,148
1970-71	38,620
1971-72	42.342
1972-73	42,316
1973-74	N.A.
1974-75	45,830
1975-76	51,000
1976-77	49,955
1977-78	50,000
1978-79	51,298
1979-80	52,186
1980-81	52,265

The cooperative are expected to play an increasingly important role in the market of supply of credit, fertilizers, seeds and other agricultural inputs to farmers. The Government also is committed to strengthen the role of cooperatives in the transformation of Indian Rural Economy.

The cooperative system also gets good support from the National Development Corporation an autonomous body. In the recent past the N.C.D.C. took up the cause of cooperative marketing societies and secured for them a number of concessions in the matter of distributing fertilizers procured from both the central fertilizers pool and the indegenous manufacturers.

In short N.C.D.C. takes up the operational problems faced by cooperatives with concerned agencies. It is currently engaged in getting long term contracts and standard terms from the domestic manufacturers. It has also undertaken an ambitious programme of godown construction at various levels.

The cooperatives have built their own storage fertilizers with district, taluka, block and village levels for the storage of fertilizers. The following table shows the storage capacity available with cooperatives.

YEAR	Storage capacity with cooperative in million tonnes
1960-61	0.8
1965-66	2.3
1968-69	2.6
1973-74	3.2
1976-77	4.1
1977-78	4.3
1978-79	4.5
1979-80	4.9
1980-81	5.2

Thus the cooperative system has the unique advantage of reaching the grass root level through its ubiquitous sole points. It has the requisite storage space both at mandi and village levels. It has the benefit of linkage of the kind of component for production credit. It enjoys State patronage and the support of N.C.D.C. As such it is reasonable to

expect that the cooperative system will be a force to reckon within fertilizer marketing in India for years to come.

IFFCO being a National level Cooperative Organisation, interested in the development of the cooperative system, markets its products essentially through the cooperatives. Only in rare situations when the cooperatives are not in a position to handle the product, it has used the Agro-Industries Corporations as an alternative agency.

By virtue of its constitutions and objectives IFFCO will be marketing its products through the Apex Marketing Federations, in each State which in turn routes the products through the lower tiers of the cooperative system such as the marketing societies and the village level cooperatives. The product is generally allocated in proportion to the share-holding pattern of cooperatives of each State of IFFCO. The share-holding pattern is shown in Annexure .

IFFCO has also established farmers service centres in the States of Punjab, Haryana and Uttar Pradesh where fertilizers and other inputs like seeds and pesticides are sold directly to the farmers along with free technical advise. These are the direct outlets of the society. Also in the Punjab, IFFCO is chanalising its product through Agro Industries Corporations and at the same time it is making direct supplies to the focal points.

In the years to come also IFFCO will continue to have these very distribution channels open for the sale of its fertilizers. Even though cooperatives will continue to be the most important channel for distribution, the availability of alternative channels will provide the necessary insurance against temporary choking up of any one of the channels.

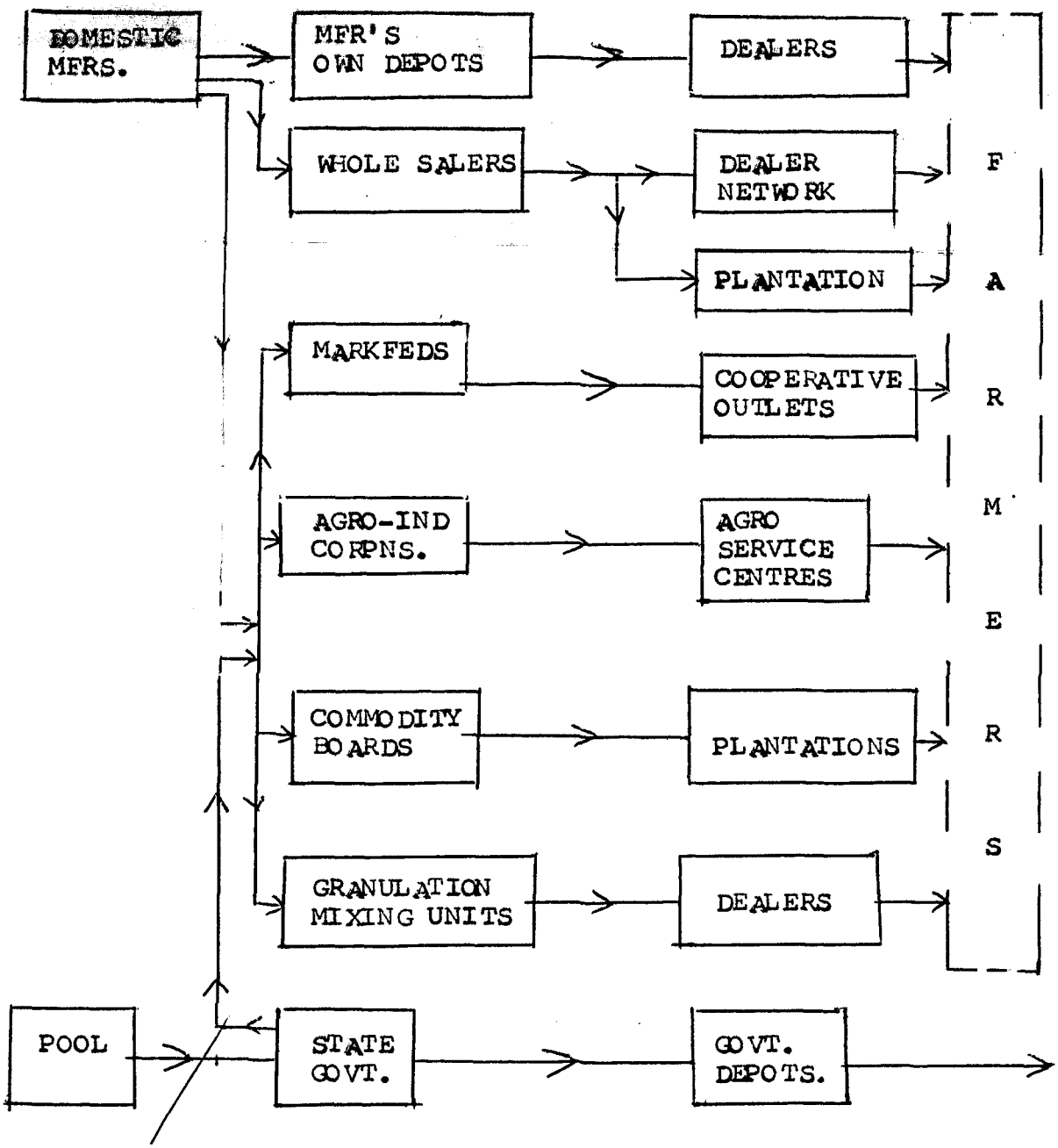
CHAPTER - IV

DISTRIBUTION CHANNEL

DISTRIBUTION NETWORK

In the ultimate analysis, the farmer gets the fertilizer from the retail outlet, be it of private trade or of an institution. The imported fertilizer is distributed generally via the institutional set-up while the domestic fertilizer goes via both the institutional set-up and the private trade. (The distribution of fertilizers directly by a State Governments is a practice which is fast disappearing). The institutional set-up comprises the outlets established by the cooperatives, State Agro-Industrial Corporation etc. A flow chart showing the distribution network is given in figure . Both the private and the institutional outlets (over 103 thousand in number) have played a commandable role in reaching the fertilizer to the farmers. Experience has shown that a policyof multiple routes is preferable to that of a single route. It would therefore, be necessary and desirable to relyon both of them in the future as well.

The apread of retail outlets in the countryside is very uneven and sometimes not even related to the potential of fertilizer consumption. One important factor which has historically led to their irrational location is the fixed distribution margin to which we could revert to later under a discussion of the financial constraints. However, even if this adverse factor is taken care of, there would still be need to make a conscious and determined bid to ensure uniform outlet from higher to neglected area. In doing so, it would be helpful to take note of certain basic facts :



DISTRIBUTION NETWORK

1. Fertilizers with other agricultural inputs like high yielding variety seeds forms a package. Their availability must be total.

2. Unlike what we may thing, farmers are busy people; they must get the fertilizer, they need without too much harassment, infructuous visits, or excessive waitings. Waiting is not merely vaxations, it is often fatal to fertilizer consumption effort. (Annexure shows distance covered and infructuous trips made by farmers.

3. Often there are no takers of fertilizer retailing agencies due to acute scarcity of talent in the country side.

4. The quantities required by small farmers are small.

5. Village growers do not like tohandle fertilizers because of the vexatious formalities of licensing, heavy licence fees, record keeping, reporting, quality control procedures and risks.

6. Where a small retailer, particularly indry farming regions or interior area tries to handle one input he finds the economic vaibility of the enterprise very poor. Fertilizer sale takes place only in certain weeks during each seasons, the routine of opening shops daily seems meaningless while capital and space remain blocked over prolonged periods. This means low turnover and high overhead costs.

7. There is dearth of suitable shops/godowns for storing fertilizer in the interior areas.

8. The banking support to interior shops is generally poor.

9. While the entire country has been covered with Cooperatives Societies. The universal membership of such societies is yet a long way off (at least in most cases). A cooperative retail outlet maynot, therefore, serve the needs of entire farming population of the village unless care is taken to ensure that cooperative retail outlet stocks enough material, observes regular retailing hours and sells to non-members also without discrimination.

10. The average farmer is generally not in a position to buy fertilizer in advance because of :-

(a) poor storage facility at his house and risk of deteriorating in quality.

(b) poor financial condition.

Generally, the farmer goes to buy fertilizer exactly when he needs it (bigger farmers are of course an exception to this rule).

11. Careful assessment of demand villagewise, halkwise (village level worker's jurisdictionwise) based upon past consumption trends with reference to the crops grown and the area under each, the types of fertilizers consumed and the benefit cost ratio obtained, the reaction amongst the farmers, the future programmes of HYV, irrigation, credit disbursement the possibility of more farmers taking to fertilizer use has

not become a habit with the village level extension worker or the retailer. Result is that while overall availability and consumption of fertilizers maybe satisfactory, there may be shifting pockets of shortages and surpluses in different districts. Reaching fertilizer to the doorstep of the farmers may remain a distant goal unless micro-level planning for crop production becomes a habit with agricultural extension function arise at the ground level, and a mechanism is developed toensure availability adequate and timely of all agricultural inputs required by the farmers. In such an excercise, development of a monitoring system - unencumbered by excessive paper work - to facilitate mid-stress corrections in view of the developing weather situation holds thekey to the success of the effort. This is necessary because fertilizer is a very costly input. It is also a bulky input. It cannot be transported over long distances at a short notice (fertilizer consumption period after emergence of demand is also generally very short). It cannot be kept much in excess of requirements because of the heavy inventory carrying cost as also the sheer non-availability of material in such abundance.

Many of these facts can be taken care of by suitable policy decisions. Some important suggestions in this connection are :-

(1) Open composite input Distribution Centres (CIDCs) at places still to be covered by input retail outlets and convert existing fertilizer retail outlets to CIDCs, whereever

possible. Selling of all inputs under one roof will :

(a) Improve the economic viability of the Centre.
(b) provide round the year work for the entrepreneur.
(c) Minimise demand on the scarce entrepreneuial talent in the countryside.
(d) Facilitate proper supervision, guidance and help from the State Government.
(e) Make it easier for Government to sponsor and for banks to accept and extent cash/credit facilities and above all.
(f) Make it most convenient for the farmer to get physical inputs and possibily in due course, knowledge input, at one place.

This idea has already received wide acceptance, its implementation, however, deserves to be made faster and more comprehensive.

(2) Since a CIDC cannot be set in each of the 5,76,000 villages of the country, it would inevirably have to cover a group of villages. Reaching fertilizer to the farmer in his village could be ensured by introducing a system of part-time agent in each village. Collecting indents from different farmers (on 'cash' basis or on cooperative or bank credit permit basis), taking this bullock-cart (or horse carriage (tonga/Ekka)/proper tiller-trailer/tractor trailer as and the case maybe) to the CIDC, to collect the supplies and deliver them to each farmer. This service would be performed on the payment of charge to the agent by the CIDC.

(Even a village grover could be encouraged to perform such a function without getting involved in the plethora of paper work pertaining to registration, submission of reports, returns, etc.). There is urgent need to insititutionalise such an arrangement, as opening in 5,76,000 villages of India would never be a practical proposition.

(3) The retailing of fertilizer could be greatly improved by a proper dealers training programme. A fully trained sales force atretail outlets, trained in marketing techniques, in broad essentials of fertilizer use technological status of the marketing zone, input distribution laws, accounting system and customer service would go long way in providing valuable support to the retailing system.

(4) The issue of warehousing and storage at the retail end needs to be tied up more neatly. The efforts of the Deptt. of Rural Development, NCDC and private sector needs to be coordinated to prevent overlap at some places and neglect at the others.

(5) The concept of micro-level planning for crop production villagewise, VLW halkwise and then blockwise, estimating the input requirements (seeds, fertilizer, persticides, diesel for pumping sets and tractors, credits, indenting for them and thereafter monitoring supplied is an inescapable necessity if purchased input-based scientific agriculture has to take roots in every nook and corner of such an arrangement, establishment of an efficient and just input distribution system would remain a distant goal.

CHAPTER - V

CONSTRAINTS IN DISTRIBUTION CHANNEL

CONSTRAINS IN DISTRIBUTION

(A) TRANSPORTATION

(1) RAILWAYS

The railways are the major carriers of fertilizers, carrying at present about 18.9 million tonnes which constitute 169 percent of the total fertilizer carried by both rail and road. The rapid increase in fertilizer consumption over the last few years has been rather demanding on the railway system. The profound changes that have taken place in the movement pattern of the railways - both product-wise and streamwise - have made their task of matching the rising fertilizer transport requirement with additional availability of wagons even more difficult. (Annexure III). Nevertheless, thanks to the innovations adopted so readily by the fertilizer industry and imported fertilizer handling agencies, like movement of fertilizer in train loads (now jumbo) single point rakes, secondary road movement, rationalisation of movement (occasioned frequently due to brand names) and introduction of the product exchange concept, the movement of fertilizer in open box wagons, etc., the total quantum of fertilizer moved by rail has risen over the years, albeit slowly (Annexure IV). Keeping in a view that the requirements over the coming few years are going to increase

significantly (Annexure IV), an excercise to further rationalise the movement of fertilizer, to reduce the lead in fertilizer movement (in), the average lead per tonne of fertilizer moved by rail was Kms, to identify nodal points (based upon recent Rites report) and to create matching infrastructure for quick unloading on suitable covered plateforms is on. The success of this effort is vital for maintaining as efficient transportation system

Apart from the jack to sufficient availability of wagons, there is another important limitation that needs to be mentioned. The railways move the fertilizers only upto the railheads. And unfortunately the rail-heads are most unevenly dispresed in terms of space. These are areas without a rail-head within a radius of 100 miles or even more, as many as 2,900 blocks.

(ii) ROAD TRANSPORTATION

From railhead onwards, it is the road transport that takes charge of fertilizer movement. In addition, fertilizer is also increasingly moved by road directly from factories and ports. The share of road transport has increased from 13 per cent in 1980 to 15 per cent in 1981-82. As at present about 8.00million tonnes of fertilizers is carried by road, of course, part of it, say nearly 800 million tonnes gets delivered at destination which are the close proximity to the ports. A major constraint to the use of road transport that would be increasingly delt in the year ahead is the difficult diesel availability and its steeply escalating cost. This apart,

there are the added problems arising from the sheer absence or lack of adequate transport fertilizers in the interior. Although the movement offertilizer after it has been delivered to the dealer from factory/warehousing/railway station takes place by road and much of it in bullock-cart, tongas, cycles, rickshaws or even head-loads, there is no data available about it. Nor has the adequacy or otherwise of the transport facilities in the interior yet been a subject of serious study. All the same, it is known that in hilly tract, tribal belts, remote inaccessible areas and flood-ravaged parts of the country, lack of necessary transportation facilities constitutes another major hurdle in reaching the fertilizer to the farmers.

There are certain suggestions which would seem to emerge from what has been stated so far. One is that keeping in view the rising energy cost of road transportation and the growing load on the railways, there is need to consider the feasibility of having recourse to inland water transportation which has hitherto remained untapped so far as fertilizers is concerned. In several other parts of the world, inland water ways moved massived quantities of material by barges/boats. This model is considered to be less energy - intensive and possibly cheaper than rail transportation. A project for movement of fertilizer by the inland Water Transport Corporation from Assam to parts of Bengal, Bihar and Uttar Pradesh has already been conceived. A similar exercise should follow to

explore this possibility in other parts of the country. It would alsobe useful to consider coastal shipping as an alternative mode of transportation in order to relieve the pressure on rail movement to the extent possible. Of course, the problems of congestion at the ports which are currently contributing to the delay in imported fertilizer reaching the consumption centres will also need simultaneous attention. Modernisation of fertilizer handling method at the ports is another area where lot of work remains to be done.

The need to reduce the demand on the railway system gives an edge to our recent slogan of optimising the use of fertilizer instead of maximising its dosage. The extension effort of the Ministry of Agriculture carried out in close collaboration with State Departments of Agriculture and the industry should take particular note of this endeavour to achieve tangible results in the shortest possible time.

Given the grossly uneven spatial dispersal of rail-heads and their absence innumerous blocks, coupled with the need to minimise the use of road transport in view of the progressively difficult availability of diesel and its rising cost, an exercise to study the techno-economic feasibility of extending the rail network to selected blocks should be worthwhile and merit serious consideration.

Bulk transportation of fertilizer by rail can save costs, guarantee availability of (dedicated) wagons and help

reach it to the farmer faster and cheaper. This is an area which has yet to be attempted but is one where lot of work can and should be done quickly.

Above all, there is clear need to envolve an overall transport policy for the country which would take congnizance of the various constraints that have already mentioned. Happily the Government of India have constituted a high powered committee under the chairmanship of Shri B.D. Pande to formulate a national transport policy for the next decade. The recommendations of this Committee would include an optimal inter-modal mix and suggest appropriate technical choices within each system consistent with our plan priorities. The Committee would also recommend areas in which research and development in the transport field should be undertaken, it would also suggest the institutional framework for carrying it out.

(B) WAREHOUSING

Fertilizer cannot be moved in one shot from the port/plant to thefarmers' field. Storage at the factory site/near the port, than at some intermediate point and finally at the retail centre is generally required. This arises primarily due to the fact that production and imports are a continuous process while demand for fertilizers is highly seasonal and time specific. The magnitude of storage requirements for seeds, fertilizers, pesticides etc. is so large that there is

distinct need for a national storage policy for agricultural inputs which can take care of an intergrated input supply system for agriculture. Fertilizer would naturally be the biggest component in the package of agricultural inputs. Efficient, adequate and economic storage intra-structure is a necessary pre-condition for making the right type of fertilizer available to thefarmers at the right time and in the right quantity.

From the macro-angle, there is need to plan and provide for adequate storage intra-structure of the right type in the country. A national programme with clear ear-marking of funds isessential. At the micro-level, there is need to ensure that the right type of godowns are constructed at the right places. Location of godowns is going to be with rising energy costs, a critical factor is ensuring easy availability of vital inputs to the farmers. In other words, there is need for a rational storage network from the nation to the micro-level to optimise the pattern of locations. Such a network inevitably would cover the needs of buffer storage which is so essential to ensure that temporary disruptions in the production or import of fertilizer do not upset the agricultural programme of the country.

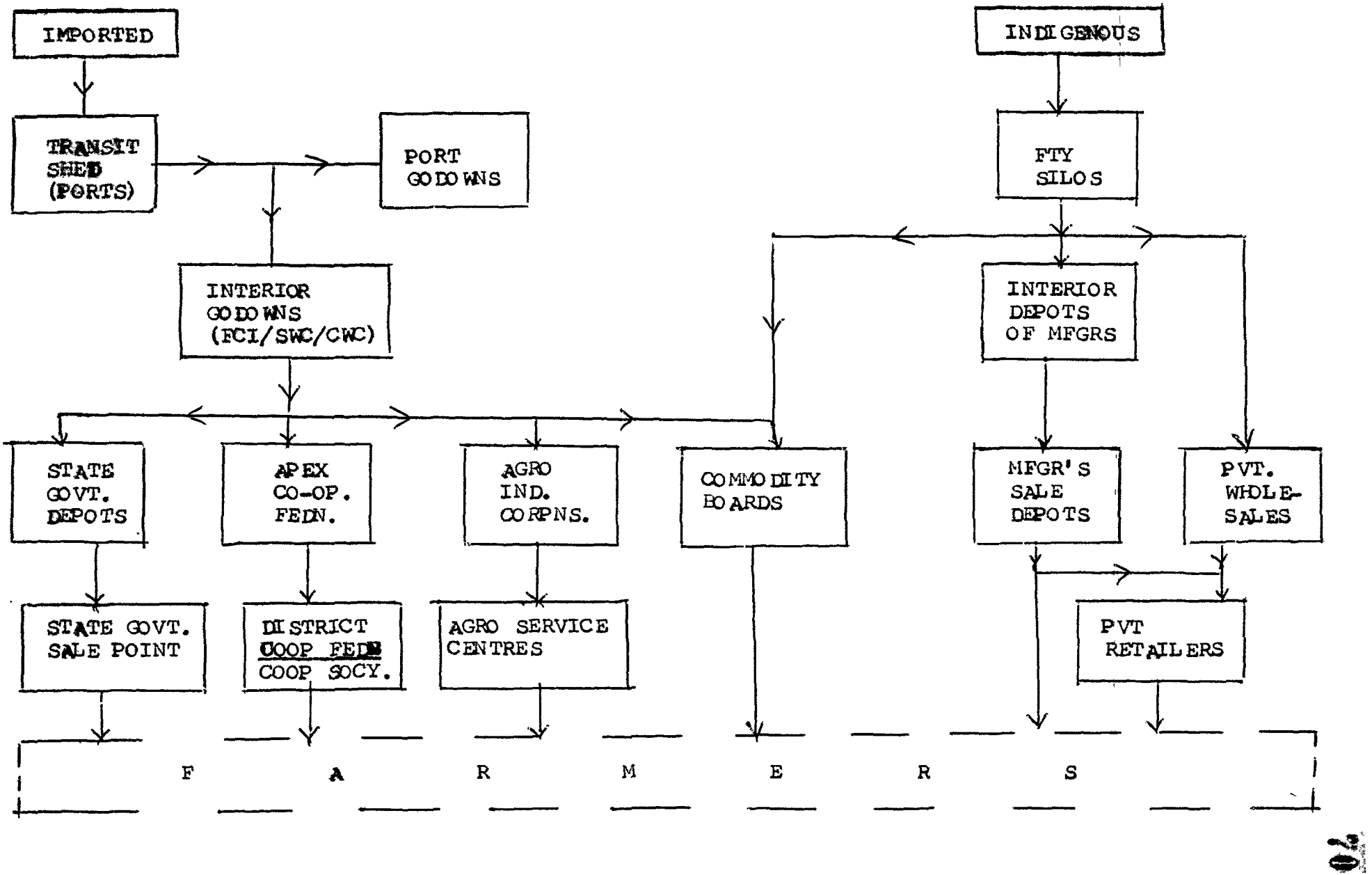
The N.C.D.C. (National Cooperative Development Corporation) has already embarked upon an ambitious programme of constructing rural godowns, it has built up a capacity of 4.5 million tonnes and it hopes to add another 5.5 million

tonnes by 1982-83. About 50 per cent of this capacity is expected to be available for fertilizers. Broadly, the pattern is that at the primary society's level, the godowns have generally a capacity of 50-100 tonnes at the marketing society (Mandi or block) level, the capacity is generally 250-500 tonnes, and at the Apex (State) level, the capacity sanctioned varies between 1,000 tonnes to 5,000 tonnes. This programme when completed by 1982-83 would provide a firm foundation for a reliable input distribution system through the cooperatives.

The Department of a Rural Reconstruction is also planning construction of rural storage centres to serve the interest of small farmers. Such centres are expected to provide facilities for storing agricultural inputs, machinery, seed, fertilizers and pesticides.

The Government of India have a entrusted a detailed study of the subject of warehousing and storage of fertilizer to an expert consultancy organisation. This report is expected to recommend the size of a storage requirements for operational and buffer stocks both for indegenous and imported fertilizers over a period of time and make recommendations on the improvements required with reference to inventory control, quality control, and handling practices. It is also expected to recommend the type of new facilities that should be set up with reference to the latest technological advancements in the field. The organisational aspects, the management information

STORAGE POINTS



system required for this massive operation and the need for R & D effort to tackle problems of marketing, logistics, packing methods and retail dispending are also supposed to be covered by this study. Government of India's comprehensive action plan is awaiting the recommendation of this expert study. In the meantime, many State Governments under advice from the Government of India have constituted inter-ministerial groups to examine the storage needs and existing facilities with reference to anticipated demand in the eighties.

(B) FINANCIAL CONSTRAINTS

(i) DISTRIBUTION MARGIN

The retail outlets which eventually reach fertilizer to the farmers are spread out very unevenly in the country side. The latest assessment is that even now over 200 blocks in the country do not have a single retail outlet. (Annexure VIII). Cooperatives by definition are village-based, while the private retailer is not necessarily so; his rests are too often urban. Even where the cooperatives are weak, private trade has not always stopped in. The reasons for this are not far to seek. The private trade is guided, in the main, by profit motive. Naturally so; if a private retailer can sell his fertilizer at the railway plateform or at the district, taluk or block headquarters, he would understandably be disincluned to carry it at his in cost to a village, say 30 Kms away and wait for its sale over a period time. This explains the concentration of private retail

outlets at or around district or important taluk or block headquarters located at important rail-heads. While doubless the cooperatives are guided by the larger consideration of service to the members, they too would fail to thrive and function efficiently if their not business result is zero or negative profit in the long run. It would, therefore, be necessary to ensure that the retail outlets - whether private or institutional are able to earn a reasonable profit. In this, the distribution margin has a crtical role to play. As the distance of retailing point increases from a rail-head, the selling of fertilizer at the statutorily notified price with distribution margin (Annexure) whichis uniform for the whole country becomes progressively unattractive for the retailer. This seems to be the largest single hurdle in reaching fertilizer to the farmers door-step.

A system has, therefore, to be devised to make fertilizer retailing qually attractive at any place in the country. The Marathe Committee on Fertilizer prices has strongly recommended that the system of delivery of fertilizer at the block headquarters so that the secondary transport may, by and large, be within the limits envisaged and provided for in the distribution margin. At present, the disability of the retailer to economically reach fertilizer to the door-step of the farmer combined with a difficult agricultural conditions in the interior location (due to (i) lack of irrigation facilities, (ii) indequacy of marketing infra-structure for

selling agricultural product at remunerative price, (iii) the compulsion of catching moisture in the soil within a short span of time, and, therefore, needing synchronous and timely availability of all agricultural inputs and (iv) indequacy or banking facilities) have made matters worse for the farmer who is already in a dis-advantaged position in terms of infra-structural development and agro-ecological endowments. Thus, the policy of delivering fertilizer f.o.r. rail head at a uniform price giving indentical distribution margin to every dealer irrespective of his transportation costs (which in some cases may be about equal to the entire distribution margin itself), and selling fertilizer at a statutorily notified price for the country suffers from built-in negativism and economic inequity.

The realisation of this handicap has already led to serious rethinking on the subject. Some steps have been taken to improve the situation. Firstly, in the hill areas a number of road points have been declared as rail-heads (Annexure) with a view to covering the cost of transportation to these road points where from the retailer could carry the pool (imported) material at his cost to the villages in the interior.

Secondly, the rigour of rail-head concept has been softened with the introduction of the road-subsity scheme in 1978 coupled with the concept of single point destination for block rakes carrying fertilizers. This has to some extent enabled movement of indigenous fertilizers nearer the

consumption centres. The next logical step in this direction would be to consider payment of freight upto block headquarters. The matter is under serious consideration of the Government of India. Once this happens, reaching fertilizer to the door-step of the farmer would become a much easier proposition. Such a policy would lead to a significant widening of the base of fertilizer distribution and ultimately of its consumption.

(ii) DISTRIBUTION CREDIT

Distribution credit is a vital input for ensuring movement of fertilizers from the manufacturers (the pool) to thefarmers. Movement can take place only after the distributors make financial arrangements for purchasing the same. Considering the cost and quantity of fertilizer handled, it is not, in all situations, possible for the the distributors to make financial arrangements on cash basis. Adequate credit has to be provided tothem to bridge the gap between their requirements of fertilizers (in financial terms) and their resource position at any point of time. The handling agencies of the Pool are allowed a credit period of 60 days which is passed on by them to the distributors. Manufacturer also sell fertilizers on credit terms. In addition to credit from the manufacturers and the Pool, distributors also avail of credit from commercial banks, cooperatives etc. The amount of distribution credit required in 1982-83 is estimated at Rs.1,600 crores. For this purpose, efforts would have to be made in the following directions :

(a) Reduction and rationalisation of margin money requirements for commercial banks as well as cooperative banks.

(b) Rationalisation of interest rates for distribution and production credit.

(c) Introduction of flexibilityin the grant of credit limit as the overdues position from year to year (which is highly variable factor) has serious impact on the credit limits sanctioned; and

(d) Simplification of procedures for disbursement of credit including timely processing of applications for credit.

Unless measures aretaken to meet all the above factors, the distribution line would get checked or constructed thereby hampering the availability of fertilizer to the farmers.

(iii) PRODUCTION CREDIT

For the farmer too, fertilizer is the costliest input. He needs credit support. Whereas the subjects discussed earlier have the (push effect' in reaching fertilizer to the farmer, the availability of credit with the farmer creates the 'pull effect' in attracting fertilizer just as 'knowledge pull'. Cooperativesare playing a big and meaningful role in providing credit to the farmers, Commercial banks have also entered the scene, and are slowly improving their impact.

ANNEXURE - III

GAP IN AVAILABILITY IN RAIL CAPACITY

Particulars	1977-78	1978-79	1979-80	1980-81
Programmed rail movement	8.19	9.18	11.07	11.97
Actual rail availability	7.80	8.20	8.56	8.88

Source : Marketing News, 1982.

A N N E X U R E - V

Year	Estimated requirements
1982-83	11.97
1987-88	16.31
1989-90	28.90

Source : Marketing News, February, 1982.

ANNEXURE - VI

DISTANCE TRAVELLED BY FARMERS TO GET FERTILIZERS

State	Average distance (Kms.)	No. of trips made by farmers	
		Total	Infructuous
Andhra Pradesh	16.0	2.5	1.1
Bihar	9.9	2.4	0.6
Gujarat	5.9	2.7	1.3
Haryana	11.4	2.3	0.5
Karnataka	5.8	1.5	0.2
Madhya Pradesh	7.9	1.5	0.9
Maharashtra	8.7	1.8	0.5
Punjab	14.7	3.1	1.7
Rajasthan	13.5	1.9	0.4
Tamil Nadu	6.3	3.3	2.1
Uttar Pradesh	7.7	2.2	1.0
West Bengal	15.5	3.3	0.8

Source : Marketing News, February, 1982.

ANNEXURE - VII

RETAIL POINTS IN BLOCKS

Particulars	No. of Blocks	No. of blocks not having fertilizer retail points
South Zone	1,022	11
West Zone	1,173	33
North Zone	1,220	2
East Zone	1,478	161
	4,893	207

Source : Marketing News, February, 1982

CHAPTER - VI

A - ADVERTISING & SALES PROMOTION

B - SALES PROMOTION & COMMUNICATION

ADVERTISING AND PROMOTIONAL WORK

ADVERTISING

It is acknowledged fact that agro-chemicals specially fertilizers was the fuel that sparked off the ignition of green revolution. Attempts are being made constantly by all those connected directly - manufacturers, marketers, distributors, dealers and indirectly - Department of Agriculture, Cooperative Extension Agencies to convey the message to the farming community most effectively. In this process, various media are used as tools.

The basic rules of marketing, any product making it available in time, in adequate quantities, at correct prices, without suffering an iota of quality. This is the essential ingredient and substance of a business activity, which ultimately results in creating more customers.

The following are main features of IFFCO's Promotional Programmes which are most commonly used media in any agro input business.

(1) Crop demonstration.

(2) Farmers meeting.

(3) Field days special compaign programmes.

(4) Crop Seminars.

(5) Training Programmes.

(6) Use of mass media and other publicity aids.

(7) Village adoption programme.

(8) District adoption programme.

(9) Farmers service centres.

(10) Farmers Training Institutes.

(1) CROP DEMONSTRATION

Lying out crop demonstrations on the fields of farmers has been found to be one of the most important tools for convincing cultivators to adopt improved package of practices. Two plot demonstrations, block demonstrations and whole farm demonstrations are conducted by the field staff of IFFCO. IFFCO demonstrations are conducted without the provision of any subsity on fertilizers. In two plot demonstration IFFCO's recommended practice for fertilizer use is compared with farmers own practice of fertilisation, the rest of the practices remain identical in both the plots. These demonstrations are mainly conducted on the fields of small and marginal farmers who need to be educated for adopting improved agricultural technology. Whole farm and block demonstrations are also carried out on the farms of individuals or a group of farmers. The size of balanced fertilisation is demonstrated on these comparatively large farms to convince the farmers, that improved package of practices are applicable under field conditions and by adopting balanced fertilization programmes, linked with other improved practices they can obtain more yields and profits. Only a limited number (5 demonstrations) are carried out by

each field representative every year.

(2) FARMERS MEETING

Farmers meeting have been found to be the most effective media of communication to the farmers. Farmers meetings are arranged from time to time in selected villages where improved package of practice alongwith efficient fertilizers use are explained in detail. At times, the method of demonstrations are also given for various agronomical practices. A limited target of only 4 farmers meetings for each field representative in one year has been set. However, IFFCO's own experience has shown that the staff conducts more than targetted number of demonstrations.

(3) FIELD DAYS SPECIAL COMPAIGN PROGRAMME

The field day functions are organised at the site of successful crop demonstrations. Farmers from the demonstrating village and the neighbouring areas are invited and the beneficial effects of IFFCO's practice of fertilization are explained and compared to the farmers earlier practices. Local farmers as well as experts from the research institutions and agricultural universities are also invited to participate in these meetings and discussions.

(4) CROP SEMINARS

The experience of working with the farming community while conducting different types of extension

programmes, has led IFFCO to adopt a new strategy in organising special compaign programmes like soil testing, seed treatment. Organising seminars to bring about the most meaningful communication between the scientists, farmers and the extension agencies working for increasing agricultural production. In these seminars one specific crop like sugarcane, cotton, wheat, pulses and oilseeds are selected for specialised treatment and the audience including farmers, cooperative personnel and extension workers are exposed by experts to improve agronomical practices recommended for that particular crop in that particular region. These seminars are generally organised at the regional headquarters in collaboration with agriculture universities and research institutions.

(5) TRAINING PROGRAMMES

The training programmes are organised for IFFCO's own personnel twice a year in order to upgrade their technical knowledge and also to make them successful salesmen and good communicators. The training programmes for cooperative personnel have given rich dividends because they are the people who are in fungicides, insecticids and weedicids etc. Thorough services has been rendered to them by the input manufacturers. A programme such as soil testing has proved to be the most important tool for bringing awareness among farmers in the use of balanced fertilizers. In these programmes, the farmers assembled at a particular point are given method

demonstration for various types of programmes and the same thing is repeated by all the assembled farmers with the help of IFFCO's staff. The maximum efficiency of fertilizers cannot be achieved unless the farmers adopts the full package of practices. This is one of the way where by the service at the door step of the farmer, isrendered. Fully convinced to the concept of complete package of practices for increasing agricultural production the farmer adopts them willingly.

The crop seminars are relatively new addition to IFFCO's promotional startegy. The close touch with the farming community, cooperative personnel are trained in the package of practices for various crops, balanced fertilization programme, efficient fertilizer use, fertilizer logistics and salesmenship. Each field representative organises on an average two such training programmes in a year.

(6) USE OF MASS MEDIA AND OTHER PUBLICITY AIDS

In order to bring awareness among the farmers and other people, publicity programmes are undertaken with the help of mini hoardings, signboards demonstration, boards, posters, crop folders, participation in Melas and exhibitions and use of radio and T.V. coverage for IFFCO's programmes. Radio spots are also released on the commercial broadcasting service of All India Radio seasonally in different languages.

(7) VILLAGE ADOPTING PROGRAMME

Each village in the country is a unit in

itself. Its prosperity can only be ensured through an integerated development programme. Based on the experience gained by IFFCO through its promotional programmes, it was felt that extensive work should be taken up in some of the selected villages where the IFFCO field representatives should serve as catalytic agents for involving different agencies in the all round development of the villages. Each IFFCO field representative is given the task of adopting one village under this programme. In adopting village the tasks expected of the field representative are as under :-

(a) To act as catalytic agent to bring together different professionals such as Technicians, bankers, suppliers of inputs etc. so that they could have meaningful dialogues with the farmers and contribute towards the socio-economic development of the area. This is based on the philosophy that modern science and technology can be brought home to the farmer in the village onlyin the language he knows so that tangible results are achieved.

(b) To render assistance the farmer in drawing soil samples, getting the results of soil analysis interpreted and recommending proper fertilizer doses based upon on soil tests.

(c) As a part of farmers education programmes to conduct and arrange (i) large number of field demonstrations designed to help farmers in adopting improved farm management practice, (ii) farmer's meetings and field days on the one

hand group discussions and farmers training programmes on other for explaining the package of practices and their cost benefit ratio.

(d) To arrange the availability of fertilizers at the right time near the farmer's home.

(e) To organise intensive training programmes of the cooperative sales point personnel to provide them with essential agronomic information about plant nuterients, fertilizer use etc., so that through this important channel the message could be transmitted to a large number of farmers.

(f) To assist the farmer in procuring timely cooperative credit for purchasing inputs. Even though a part of credit is made available to farmers in kind, due to procedural problems, it does not reach them in the time and the crop season is lost. A close link with the cooperative bank and cooperative department generally results in removing such bottlenecks and provides real assistence to the farmers.

(g) In order that the farmers are able to get production credit in time for purchasing inputs the formalities of getting cooperative credit need to be quickly fulfilled. This alone can ensure proper utilisation of cooperative credit and its non-diversion to unproductive channels. IFFCO's field worker renders help in this direction as also in working out individual farm plans of selected familier in the village.

(h) To help in the diversification of agriculture by encouraging farmers and landless labourers to take up poultry farming animal keeping, growing of vegetables etc.

(i) To enlarge membership of the village cooperatives so that cent per cent farming families join the society, also to ensure that the recoveries of cooperative credit are total and full. Special emphasis is laid on serving the requirements of small farmers in preference to the bigger costs.

(j) To give lessons in balanced nutrients and encourage farm youth to grow vegetables etc. in their youth Clubs.

(8) DISTRICT ADOPTION PROGRAMME

On the basis of irrigation potential and other infrastructure the Government of India indentified in Kharif 1976 for the purpose of intensive fertilizer promotion compaigns of 20 district falling under IFFCO's marketing area have been adopted by IFFCO. In these adopted districts, survey work on the existing potential related to high yielding varities fertilizer use, number of sale points, irrigation facilities and other agricultural aspects are undertaken and on action programme is drawn up. Promotional programmes like soil testing, seed treatment and plant protection programmes are intensified. Fertilizer is made available in time. In district adoption programmes all promotional and supply activities are organised withthe cooperation of district agriculture authorities.

(9) FARMERS SERVICE CENTRES

IFFCO has established farmers service centres

with the specific objective of providing agricultural inputs such as seeds, fertilizers, pesticides along with the package of technical guidance to the farmers in the area. The farmers come to the centres, to meet out their requirements of inputs under one roof also they get technical advice. The centres are run by agriculturally qualified persons who have been trained to give proper guidance to the farmers. At the moment these farmer service centres are functioning in Punjab, Haryana and Uttar Pradesh. In all 57 centres are functioning in these three states.

(10) FARMING TRAINING INSTITUTES

Cooperative Rural Development Trust formed by IFFCO is setting up "Motilal Nehru Farmers Training Institute" near the site of IFFCO's Phulpur plant. The institute and the farm is spread over an area of 120 hectares. Its philosophy is "Learning Through Doing" and it is intended to serve the following objectives :-

(i) To communicate the message of modern agriculture to farmers in a way that they will adopt it.

(ii) To develop professional leadership amongst young farmers so that theybecome message carriers for others.

(iii) To serve as a model farm in the locality to create awareness among farmers regarding the potential benefits of scientific farming.

FERTILISER SALES REPRESENTATIVE

In a sense, a fertilizer sales representative is like any other field sales representative doing similar functions and fulfilling similar roles. Yet he is very different in more ways than one form his counterparts in the consumer goods market.

It has been recognised for quite some time that the marketing of agro imputs which includes fertilizers has many unique characteristics about it. In the first place the market is very different from one where the sale of consumer goods, industrial goods and services have flourished all the years. Whereas, traditionally, our marketing efforts have been concentrated in the urban area, the entire market for fertilizer is in the rural area.

It is well known that the characteristics of the rural market are vastly different from those of the urban market. In as much as rural marketing differs from urban marketing, fertilizer selling becomes a special job distinct from the job of selling other commodities.

Again, if we take the product as such, fertilizer is a special product which could neither be classified along with the consumer goods nor with the industrial goods. It is not an end product to the farmer even though it is one to the fertilizer marketing man. As far as the farmer is concerned,

fertilizer is essentially a raw material or an input with which he produces his valuable agricultural commodities. Moreover, while in theory fertilizer application would increase the agricultural yield manifold, in practice it must be admitted that a fertilizer alone will not do the trick. The yield depends on a number of factors. Unless fertilizer is applied as a part of a package of inputs supported and supplemented by the order two packages, viz. the package of services and the package of practices (the modern farming technology) the satisfaction expected of fertilizer use will not be there. This is another special aspects of the fertilizer marketing job.

Not only the market and the product are special, but every other aspect of marketing such as the consumer, the channel, the problems of physical distribution, mass, communication, sales promotion, after sales services, personal selling by individual salesman etc. also become unique when they are applied to fertilizer marketing.

Tasks of a Fertilizer Sales Representative

Basically the job of a fertilizer salesman consists of the same tasks which any other salesman is called upon to perform, viz. :

1. Selling and stimulation of sales by personal contacts.
2. Sales administration or assisting in sales administration.
3. Warehousing Management or assisting in Warehouse Management.

4. Sales Promotion or assisting in Sales Promotion.
5. Supplying "Food Back" and "Market Intelligence" to the company.
6. Managing the Dealer network Selection, Appointment Development, Training & Motivation of Dealers.
7. Servicing Dealers.
8. Servicing Customers.
9. Credit Management and collection of outstandings.
10. Public Relations/Liaison.

In each of these tasks, the salesman is an operator, as well as a planner. If we consider the selling tasks as such, the field sales representative actually implements the sales plan of the company. At the same time he is involved in the Sales Planning of the company himself - at the grass root level. For the Marketing Division of a company, the field salesman is the point where every thing starts and where every thing ends. Just as in the case of "Actual Selling" in the order related tasks such as "Sales Promotion" or "Customer Service" or "Market Assessment" the field representative acts a bit of a planner and a bit of an operator. Because of this peculiar situation, the salesman, often becomes a self-managed operator. His success depends on how effectively he manages himself.

THE SELLING TASK

The field sales representative performs his primary

task of "Selling" by meeting the existing demand with the supply of the products in time. In the case of a commodity like fertilizer, the time factor or the seasonal factor is very important. And if the salesman fails to conclude a sale in time he misses it for ever in the case of fertilizers. Apparently he has to stock fertilizers at the appropriate time and at appropriate centres and coordinate the sales job with the job of warehousing and the job of transport from the production end.

CREATION OF NEW CUSTOMERS

His next important task is to locate potential demand for his products and convert the "Prospects" into his "Customers". This task, he performs bya bit or Market Research or Analysis and by a bit of "Personal Selling". Winning new customers or "New Accounts" for the company constantly is an integral part of a salesmen's job. In fact it would be no exaggeration to say that a salesman gets paid primarily for :

(a) Customer getting; and
(b) Customer keeping.

"Meeting Competition" is an important prerequisite for "Getting Customers" and "Keeping Customers". The salesman "Meets Competition" by making himself a link simultaneously in three different channels of communications - in what goes on :

(i) Between Company and Customer,
(ii) Between Customer and Competitor; and
(iii) Between Competitors and Company.

It is difficult for a salesman to be effective in meeting competition unless he is thorough in his assessment with regard to :

(a) Competitor's sales details;
(b) Competitors Pricing Policy;
(c) Competitors activities in dealer motivation;
(d) Competitors activities in customers motivation;
(e) Competitors promotion media;
(f) Competitors relative advantage and disadvantages - strength and weakness in the market in comparison with his own company.

DEALER MANAGEMENT

A field representative is a actively involved in the selection, appointment, training and motivation of the dealers. In fact, the development of an efficient expanding, prosperous and successful network of dealers in the prime responsibility of a sales representative.

Depending on the distribution policy of the company, the sales representative has to build the distribution channel. While the channel policies are decided by the top management, the selection of individual dealers is often the responsibility of the field sales representative. He should apply well defined criteria while selecting persons for appointment as dealers and once theyhave been appointed he should go all out to make them successful outlets of the company. He plays a

vital role in developing, training and motivating the dealers. Dealer development is a continuous job.

STOCK MANAGEMENT OR INVENTORY CONTROL

For any large sized company finished product inventory control is a major task - a major cost saving area. The field Sales Representative has a vital role to play in this. He should know when to order for what products and in what measure. He should know where to store, what products, how much and when. He should strike a balance between "Selling" and "Stocking" on one hand and between "Stocking and Ordering for further despatches from the production Centre" on the other hand. He should be conversant with all these fundamental and useful principles of materials management and adapt them in practice to the fertilizer marketing job in the given context of his territory.

Depending on the organisational set up within which he works, he also play a role in warehousing planning and warehousing management.

One feature that is special to fertilizer marketing in the matter of inventory control is high seasonality of the material.

ROLE IN SALES PROMOTION

Different organisations have different systems and operation methods. Depending on the system adopted by the

particular organisation in which he happens to work, the salesman will have to play his role in the sales promotion activities of his organisation. Normally, the planning and implementation of sales promotional activities will be carried out by the staff of the department concerned. But as the lineman, right on the spot, the field representative will have to do the magic of sales - promotion also by himself to a large extent. He only assists the company in its sales promotion programme but also feeds the company with valuable information about the sales promotion programmes of the competitors and often makes his own suggestions on effective sales promotion.

Activities like demonstrations, field day, study classes, minor exhibitions, film shows, mike announcements, fertilizer festivals etc. would come under sales promotion. There is a good deal of planning involved in each of those activities.

COMMUNICATION AND REPORTING

Sending "food back" to the company is an equally important task of a sales representatives. Normally a sales representative is expected to spend a good deal of his time on "reporting". It is, therefore, very essential for him to be thorough with the process of reporting and communication. He helps the management in decision making by his "reporting". It will breadly consist of :

(a) Regular report; and

(b) Special reports.

The regular reports will include the prescribed periodical statements/returns on stock/sales etc., as well as his own tour programme/tour reports etc. In addition to these regular reports the sales representative should also feed his management on an adhoc basis, any development in the market worth mentioning. A competitor might suddenly come up with a price cut, another with an enhancement of dealer margin, a third one with an off season or quantity rebate, a fourth with a new packing or a new sales promotion gimmick. The salesman is right on the spot in the midst of these changes and developments. He has to be alive to this and report immediately to his management in a detailed manner the developments as well as their implications as seen by him.

Basically "Good Reporting" or "Feed Back Work" consists of the following steps :

(a) Deciding what messages to be sent and to whom and at what time.
(b) Transmitting the messages accurately.
(c) Summarising and interpreting.
(d) Maintaining records/files of what is reported.

KNOWLEDGE REQUIRED BY THE FERTILIZER SALESMAN

For performing most of the foregoing tasks with

competence and confidence, the field sales representative should have a good deal of knowledge. He should :

(a) Know his products : its uses capacities - value to the buyers - what benefit is actually confers on them - its competative advantages in relation to the other like products in the market etc.

(b) Know his company : Its objectives - policies - resources - methods of operation etc.

(c) Know his customers : their characteristices or profile - their motives - their goal and interests -their attitudes and view points - their strengths and weaknesses etc.

(d) Know his market : its potential - its capacity for growth - its characteristices - its problems etc.

(e) Know his competition : their plus and minus points in relation to himself in each and every respect - the product mix the distribution mix - the promotion mix - the pricing policy - presale and after sale service - credit polity etc.

(f) Know himself : his stremgths and weakness - his potential - goals and ambitious - his capacity for thinking big and acting big - the strength of his faith in himself etc.

PUBLIC RELATIONS AND LAISON

"Public Relations" or "Liaison" is perhaps the single most important function though somewhat intangible of a good

salesman, particularly in the rural marketing context.

As far as a fertilizer salesman is concerned, he will have to maintain proper liaison with the following board categories of people :

(a) Dealers.
(b) Farmers/customers.
(c) Government Officials connected with agriculture and rural development.
(d) The general Public.

Liaison with the dealers will be on a special footing since the dealers are part of the salesman's system and he will have to necessarily work through them day in and day out.

Next to the dealers, the requirements of liaison is in relation to the farmers or customers or prospects. The salesman should keep in touch withhis customers and always be doing his best to influence their decisions in favour of his company and its products. Customers are not only influenced by the quality and price but also by the goodwill and service of the salesman. This is particularly prominent in a market where the sources of supplyare very many and the price, quality etc. are more or less matching. In such conditions, more customers are won by the salesman's goodwill and service.

Liaison with the non-farming group also is equally important for the fertilizer salesman because the non-farming

group in the rural India consists of opinion leaders and message carrier. The image of a fertilizer companyin the rural market is created not only by the farmers, but also by members of other vocations and opinion leaders. This group can be effectively handled by calling on them off and on, by supplying them detailed information about one's company and one's products and services; also by inviting them to various functions or celebrations organised by the company and by distribution tothem the complimentaries of the company.

A special mention must be made about the officials of Agriculture Department and the Cooperatives in the matter of liaison, as far asfertilizer business are concerned. The Officials of the Agriculture Extension Agencies of the State as well as agricultural scientist of the teaching and research institutions are as much useful to the fertilizer marketing man as the men of the medical profession are to the pharmaceutical sales representative. The fertilizer shop could be compared to the medical shop. By convincing the 'agricultural doctor' he can get a prescription in favour of his products and the farmers will flock his fertilizer shop with the prescriptions.

It is essential for fertilizer salesman to develop contact with the officials at every level - starting from the Gram Sewak at the village level, the A.E.O. and B.D.O. at the Block level, the D.A.O. and the Dy. Director at the District level, the Director of Agriculture and his establishment at

the State level and the various other men engaged in special agricultural programme and agricultural research.

As the cooperatives play a vital role in fertilizer marketing and distribution and as they are additionally equipped with the input of credit, a good fertilizer sales representative will perform to maintain the best of relation with the cooperatives also.

With the expansion of activities in the rural area by commercial banks both inthe Public and Private Sectors. It will be quite useful to develop good contacts with the banks, so that the available bank financing facilities for agricultural production and fertilizer production and fertilizer trading could be tapped fully to his own advantage.

Whatever be the type of liaison required the principles involved in developing it are same. Essentially the more he moves with the people under reference the more is the goodwill created; the more that he impresses them with his own personality and behaviour the more is the goodwill created; the more he convinces his men about his understanding of their needs and his willingness to helpthem and closer they come to him; the more he pushes himself towards him; the more he applied the feed back on himself, his products and services, the more favourable decisions he will get from them; the more he smiles, the more are the chances of success and the more he frown the more are the chances of failute.

The essence of liaison and it role in salesmanship was put by an American in the following beautiful and convincing words :

'A linking for people - all people;
Absence of nerves as you go into a crowed room;
Enthusiasm for pulling the Cart - if it is to be done;
An even temper under stress;
Willingness to help others
Even at inconvenience to yourself.

This is not the portait of a fellow in search of a halo. It is the silhouette of a promising salesman.

And shall we say, this is all the more true of a fertilizer salesman.

OUTLINE OF THE CAMPAIGN

1. BASIC PLANNING AND WORKING OUT THE TARGETS

Taking into account the area to be grown under crops and practically sttainable levels of fertilizer doses monthly fertilizer consumption targets to be worked out villagewise, blockwise and districtwise in the selected districts.

2. ASSIGNMENT OF RESPONSIBILITIES FOR ACHIEVEMENTS OF TARGETS

Responsibility for achieving the fertilizer targets at the village level be fixed on the village level workers, similarly the Agriculture Extension Officers be made responsible to achieve targets which have been assigned to the VLW's. At the block level, the B.D.O. should be made responsible to achieve the targets fixed for block. At the district level, the D.A.O. or the Deputy Director Incharge of the district under the overall control of the District Collector, be made responsible.

3. INPUT SUPPLY

Necessary arrangement for stocking of certified seeds, fertilizers and pesticides in required quantities be made well in advance of the peak season at the retail outlets in order to create necessary confidence amongst the cultivators to the effect that the inputs in sufficient quantities will be available to them as and when required. Action should also be

taken in advance for working out the additional number of retail outlets especiallyin the interior potential areas and the matter for opening them be persued by District Collector/ Deputy Directors of Agriculture through the State Government with the cooperative and private dealers. As far as possible opening of composite input distribution centre for fertilizer certified seeds and pesticides should be encouraged so that the farmers get the main inputs under one roof.

4. ARRANGEMENTS FOR CREDIT

After assessing the requirements for credit district-wise target for credit be fixed and processing of applications and getting loans sanctioned, proper balancing of A & B components of the credit be done to 2-4 weeks in advance of the sowing season. Detailed review societywise at block and district level would be of great help.

5. ENSURING IRRIGATION AND POWER SUPPLY

District Collector should see that timely irrigation is available to the farmers by persuing the matter regularly with the State Department of Irrigation. Likewise the position regarding power supply for running pumping sets should be reviewed by the District Collector periodically once a fortnight with the representatives of the Department of Power.

6. INTENSIFICATION OF SOIL TESTING FACILITIES

The soil testing compaign should be launched well in advance of the commencement of the season and all available soil testing facilities must be geared up in order to meet fully the requirements of farmers in this respect.

Due emphasis be laid on using the recommended doses of N, P and K use of Zinc Sulphate and other micro nutrients of the basis of the soil test be ensured.

A performa should be prepared for indicating the soil testing results and these should be clear to the farmer. The recommendations should be made available to them well in time. This item should be regularly reviewed at various levels.

7. TIGHTENING QUALITY CONTROL

Regular checks be carried out, fertilizer samples drawn by Agriculture Inspector and get analysed in the Fertilizer Quality Control Laboratories in the State. The results should be brought to the notice of the farmers with the objective of protecting their interests and maintaining their confidence in the quality.

8. CONSTANT SUPERVISION AND GUIDANCE

Field staff of Agriculture Department must be given specific responsibility for each block of the district to make regular visits to the fields and report the difficulties to

the District Agriculture Officer/District Collector for quick action. District Agricultural staff should remain in the field during the sowing season for guidance to the farmers in timely and proper application in inputs and in adequate quantities.

9. EFFECTIVE TRANSFER OF TECHNOLOGY

The transfer of the existing technology on the use of mineral fertilizer and organic materials to the farmers should be intigrated into the Training and visit Programme of Extension as well as the normal extension activities of Extension Agencies such as Krishi Vigyan Kendras, Farmer's Training Centres, Gram Sewak Training Centres and Extension Education Institutes. Training course may be arranged for field personnel and fertilizer dealers by the State Government with the cooperations of the Extension Agencies. Block demonstration on the intigerated use mineral fertilizers and organic manures should be jointly organised by the State Department, Agriculture Universities and Fertilizer manufacturers.

10. PUBLICITY

Proper use of the mass and audio-visual aid, i.e. Press, Radio, Television, Pamphlets, Posters and Handbills for publicity on the fertilizer promotion campaign be made. This publicity should contain among other components, the

propagation of complementary use of mineral fertilizers and organic materials, application of fertilizers in balanced doses supplemented by micro nutrient wherever necessary, correct methods, time of application and places of their availability.

It is suggested that during the period of fertilizer application regular programmes should be broadcast on the radio every morning. These should be brief and in language which is understood by the farmers. In addition a monthly feature programme should be brought out for the benefit of farmers.

11. ROLE OF FERTILIZER INDUSTRY

Active application of the Industry and effective co-ordination between the industry, State Government, F.A.I. and Centres should be ensured. Fertilizer manufacturers should adopt the selected districts and draw out their over plans of action in consultations with the State Governments, fix targets of fertilizer consumption, gearing up the necessary machinery for achieving them and make arrangements for the supporting programmes including soil testing to be undertaken by them. The fertilizer industry should also promote the integerated use of mineral fertilizers and organic materials.

12. MONITORING OF THE CAMPAIGN

Monitoring of the campaign at the central level

will be done by commissioner (Fertilizer Promotion).

Central Teams will be sent to the selected districts and State Capitals for making on the spot assessment of the implementation of the campaign and report to the commissioner (FP) on the progress and problems to be dealt with on an urgent basis.

13. REPORTING OF DATA

The data should be collected in the prescribed proformas.

14. EVALUATION OF THE CAMPAIGN

At the end of the season a review of the progress of the campaign should be made. The results of the campaign will be analysed and conclusions drawn should be utilised in the forth coming season.

CHAPTER - VII

MARKET INFORMATION V/S MARKET RESEARCH

MARKETING INFORMATION Vs. MARKET RESEARCH

Market Research normally handles one time examination of one or small group of questions. Usually Market Research provides only a fraction of the data needed to make marketing decisions which have a great and far reaching implications to the company. Market Information System, on the other hand, provides continuous study of the marketing factors which are important to the company - act just intermittent examinations. Market Information System group accepts a responsibility for receiving analysing and distilling a far greater volume of information inputs than market research in structured to do. Market Information System group works in close liaison with market research, long range planning computer centre, marketing planning and sales management.

(A) NEED OF MARKET INFORMATION SYSTEMS

With the political, economic, technological and social changes that are taking place from time to time, the long term trends in marketing are necessary. Some of the changes are :

(i) The increased complexity of business - new competition & new products - calls for new and more information.

(ii) Product life cycles have become shorter - thus requiring more skill in management in order to register a profit during the reduced time available.

(iii) Marketing Manager needs more and better information, with the complexity of modern marketing to be able to come to best judgment.

(iv) The size of companies have grown in complexity and dimensions and without a good market information system, they cannot function effectively.

(v) Speed in decision marketing is the essence of modern business. Market Information System is necessary for such decision marketing.

(vi) The advent of new technique for decision making such as Bayesian analysis, PERT, decision trees and factor analysis require information.

(vii) With the advent of computers a variety of data can be handled in a short time to facilitate a more accurate decision making which was not possible earlier with archic methods. This needs more information.

(B) BENEFITS OF MARKETING INFORMATION SYSTEMS

(i) It will provide more information or better performance can be obtained by the enterprise.

(ii) The information, which is scattered in many places, is integrated and can be used more effectively.

(iii) It will permit fuller exploitation of marketing concept.

(iv) It will provide quicker recognition of developing trends.

(v) It will provide selection - retrieval of information.

(vi) It will permit better use of material collected by different agencies.

(vii) It will permit better control over company's marketing plans, for example by giving warning signals when some thing is amiss in the plan.

(viii) It will prevent important from being supressed.

(C) ENVIRONMENT NEEDED FOR A SUCCESSFUL MARKET INFORMATION SYSTEM

(i) The information should be in a form which can be readily used by the management.

(ii) The management should set out specification of the information needed so that all and sundry information is not collected which is not useful.

(iii) The information collected should be filed properly so that identification of required information becomes easy and new information can be added at the proper place without difficulty.

(iv) The system should be flexible enough to meet the changing needs of the enterprise.

(D) COLLECTING MARKET INFORMATION

(i) From internal records : Some examples of such data are sales, company's product prices, customers location etc. The data can be used to make product analysis, territorial analysis, customer analysis and so on.

(ii) External sources of information :

(a) Government published and unpublished data;

(b) Trade organisation publications;

(c) Journals and periodicals;

(d) Publications of Market Research Organisation.

(iii) Through field force : Competitors sales, competitors' terms of sale, dealers' financial status etc.

(iv) The survey methods : This method is by asking questions to selected respondents and tabulating the information so collected into a meaningful form.

(v) The experimental method : Controlled scientific experiments are laid to test various types of advertising and sales promotional plans to determine prices, to test new products and prices, Data that are already available either in published or unpublished record is called "Secondary" data while data that have to be collected for the first time is called "Primary" data.

A Typical Market Information System for fertilizer industry shown in Chart -

(E) CONTROL OF MARKET INFORMATION SYSTEM

(i) The system should be managed by professionals who are very well briefed by the Management as to their requirements.

(ii) The system should be capable of fitting into the requirements of different levels of Management. The system should give to the management only that much of information that will be useful to them and no more.

(iii) Operations of system should be analysed periodically to see whether the system is able to perform the desired objectives.

(iv) A periodical review of the system should be undertaken to see that the system is not percolating into other areas which are not part of the system.

(v) Any new information available has to be reviewed periodically to see whether the system can fruitfully use it.

(F) MARKET INFORMATION REPORTS :

Short Term : The short term marketing information reports should contain such data as may be of interest to the management is determining day to day policies. For a fertilizer manufacture some aspects that may be of interest are :

(i) Weather and crop conditions.

(ii) Competitors' promotional and pricing strategy.

(iii) Market arrivals of competitors' products.

(vi) Stock position of company's products in the field.

(v) Demand for the company's products by territory.

(vi) Daily or weekly sales.

Long Term : These reports should contain such information as may help management to frame long term marketing policy. Some aspects useful for a fertilizer manufacturer are :

(i) Future development in Agriculture.

(ii) The long term demand estimates - company's own and other.

(iii) Production pattern - Location of factories.

(iv) Logical marketing territories for the manufacturer.

(v) Company's long term production goals.

(vi) Company's sales by territories and by volumes.

(vii) The economic environments and consumer ability to pay.

Specific Reports : The system should be capable of giving specific reports on aspects required by the management, for a fertilizer manufacturer, they are :

(i) The profile of a farmer.

(ii) The economic policies of the Government, Credit etc.

(iii) The changing trends in fertilizer consumption - greater acceptance of P & K high analysis fertilizers.

(vi) Development of technology agriculture and farmer receptiveness.

(G) INTERPRETING MARKET INFORMATION

The utility of a marketing information reports depends on the skill with which the writer of the report has interpretted the information available to him in a logical and useful manner to the company. Two companies having the same information may interpret the data differently to be useful to the company. The information available has to be carefully assessed before conclusions are derived. Possible questions are - who has collected the information? What interest the agency has in collecting the information? What technique they have used to collect the information? Finally, are the results believable?

Next the interpreter of market information should evaluate the compatability of the information collected from different sources. Before using information from different sources the definition on each item of information has to be tallied.

Having done all this, the data has to be accurately interpretted. Accurate interpretation is largely a matter of logical analysis and the use of good judgment. This is very important as otherwise management may come to wrong conclusion.

The use of market information as a basis of market forecast is very difficult. Market information is generally historical. They have to be used for projecting the future.

This can be done only if one can predict the future happenings on the forecast, correctly. But it is not always possible. Also having forecast the future happenings, a judgment has to be made as to the contribution of each one of the factors in the future. This makes the task very difficult and forecast unreliable. Though 100 per cent accuracy is not expected from a forecaster, he is judgment by the degree of accuracy be attains in his forecast.

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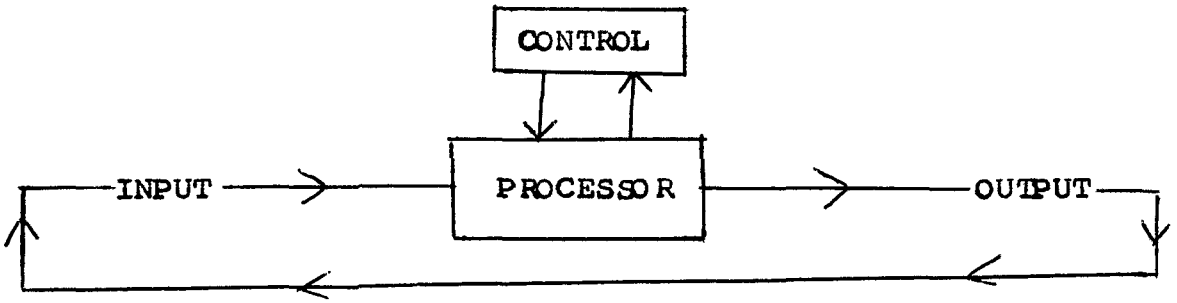
A TYPICAL MARKET INFORMATION SYSTEM

(Case : Fertilizer Industry)



1. External source of information.

Economic Indicators

National Income.
Per Capital Income.
Wholesale price of Agricultural Commodities.
Farm Harvest prices.
Cost of Living Index Number.

Agricultural Information

Rainfall data.
Cropped area - by crops.
Irrigated and unirrigated areas.
Size of land holding.
Agricultural credit.
High yielding varieties.
Agricultural prices - in your marketing territory.

Plans

Irrigation.
HYV Programme.
Credit availability.
Agricultural production Targets.

2. Internal source of information.

Marketing Data

Marketing Territory.
Marketing potential.
Competitor sales-by grades.
Market Share.
Sales potential.

Sales Data

Sales by territories.
Sales by products.
Sales by Dealers-Pvt. & Coop.
Sales to Farmers
Inventory in the field.
Cash and Credit Sales

Prices

Price of competitor products.
Credit terms by competitors.
Incentive by competitors.
Price of Company's products.
Terms of sale of Company's products.

Fertilizers

Territorial production.
Capacity - Actual production.
Fertilizer consumption.
Fertilizer prices.
Fertilizer imports.

Plans

Targets of production.
Targets of consumption.
Location of fertilizer factories.

Other Information

Sales-tax on fertilizer.
Subsity on fertilizers.
Fertilizer Control order.
Chemical conposition of fertilizers.
Soil Testing Laboratories.
States' Official Fertilizer recommendations - cropwise and areawise.

Marketing Personnel

No. of Regional Offices - Location.
No. of Salesmen-Location.
No. of Dealers - Location.
Competitor's Organisation.

Marketing Plans

Sales Plans by months.
Sales Plan by Territory.
Credit & Incentive Planning.
Sales Plan by products.

Analytical Reports

Salesman performance.
Territorywise performance.
Competitor Vs. Company.
Product Life Cycle Analysis.

Market Research Reports

Special Projects - Promotion, New Product launching.
Dealer performance.
Farmers attitudes.

CHAPTER - VIII

T R A N S P O R T A T I O N

014	015	016	017	018	019	020	021	022	023	024	025	026
029.90	034.80	041.90	154.80	133.70	126.40	092.80	133.70	141.30	152.80	163.60	159.20	170.30
029.20	034.40	045.50	150.40	128.90	121.60	087.70	128.90	136.20	148.40	159.20	154.80	165.80
031.50	041.90	035.50	128.90	106.50	099.00	056.60	109.00	116.50	128.90	141.30	133.70	148.40
192.20	200.60	195.50	078.20	101.30	124.00	141.30	131.30	091.90	116.50	064.40	098.20	103.40
121.60	133.70	126.40	133.70	114.10	106.50	092.80	114.10	121.60	116.50	145.90	138.80	138.80
119.00	131.30	124.00	105.50	098.20	076.20	078.20	058.50	091.90	056.60	116.50	116.50	089.80
094.90	109.00	099.00	099.00	076.20	060.50	047.70	078.20	085.70	082.50	111.60	104.40	100.20
152.80	161.50	157.10	114.10	089.80	111.60	131.30	119.00	099.00	144.00	124.00	094.10	163.60
150.40	159.20	154.80	103.40	080.50	101.30	121.60	111.70	089.80	116.50	116.50	083.50	152.80
157.10	165.80	161.50	111.60	086.50	109.00	126.40	116.50	096.10	121.60	119.00	078.20	148.40
163.60	170.30	165.70	103.40	092.80	116.50	133.70	124.00	089.80	116.50	114.10	061.40	141.30
185.50	194.50	190.00	114.10	116.60	131.30	143.60	138.80	101.30	126.40	124.00	082.50	150.40
240.80	243.00	240.80	174.70	170.30	188.00	200.60	196.50	161.50	183.50	181.10	145.90	203.70
192.20	200.60	145.50	078.20	101.30	124.00	141.30	131.30	091.90	116.50	064.50	098.20	103.40
226.90	235.30	230.50	231.30	152.80	157.10	188.00	150.40	145.90	150.40	128.90	150.40	109.00
267.70	271.70	269.10	207.10	222.20	235.30	245.30	240.80	215.40	232.00	205.40	220.30	220.30
273.10	277.20	274.50	220.30	235.30	245.30	254.00	249.90	228.60	243.00	217.00	233.70	232.00
240.80	247.50	243.00	152.80	172.50	196.00	203.70	196.50	163.60	185.50	148.40	170.30	168.10
251.70	255.20	254.00	172.50	192.20	208.80	220.30	213.80	185.50	203.70	170.30	190.00	196.00
267.70	271.70	269.10	207.10	222.20	235.30	245.30	240.80	215.40	232.00	205.40	220.30	218.60
168.10	179.20	172.50	152.80	143.60	126.40	152.80	119.00	141.30	116.50	148.40	157.10	094.10
165.80	176.90	170.30	145.90	148.40	126.40	128.90	119.00	141.30	119.00	141.30	157.10	119.00
212.10	220.30	215.40	168.10	188.00	172.50	200.60	165.80	179.20	163.60	163.60	194.50	126.40

	001	002	003	004	005	006	007	008	009	010	011	012	013
	055.70	053.70	050.50	030.50	045.50	031.10	031.10	053.70	032.20	041.90	045.50	037.10	048.50
	050.50	048.50	038.30	035.50	022.00	045.50	030.50	052.70	032.10	040.60	000.00	025.40	016.70
	026.40	024.70	020.40	025.40	049.70	052.70	037.80	059.50	039.30	047.70	040.00	034.40	045.50
	058.50	059.50	079.40	092.80	114.10	119.00	104.40	126.40	106.50	114.10	103.40	098.20	109.00
	103.40	103.40	114.10	116.50	143.60	141.30	131.30	148.40	131.30	138.80	136.20	131.30	141.30
	089.80	090.90	099.00	114.10	131.30	138.30	126.40	145.90	128.90	136.20	124.00	119.00	128.90
	057.60	057.66	076.20	089.80	109.00	116.50	103.40	124.00	105.50	114.10	100.20	094.20	106.50
	124.00	124.00	136.20	148.40	148.40	170.30	159.20	176.90	159.20	165.80	138.80	152.80	145.90
	124.00	124.00	133.70	145.90	163.60	168.10	157.10	174.70	157.10	163.60	154.80	150.40	161.50
	128.90	131.30	141.30	152.80	168.10	174.70	161.50	179.20	163.60	170.30	161.50	157.10	165.80
	136.20	136.20	145.90	157.10	174.70	179.20	168.10	185.50	168.10	174.30	165.80	161.50	172.50
Thal	159.20	161.50	170.30	181.10	196.50	202.20	190.00	205.40	192.20	198.80	190.00	185.50	194.80
	220.30	220.30	228.60	236.90	245.30	247.50	243.00	251.70	243.00	247.50	243.00	240.80	245.30
am	165.80	165.80	174.70	185.50	202.20	205.40	198.80	210.30	198.80	203.70	194.50	190.00	200.60
	207.10	207.10	215.40	223.00	235.20	240.80	232.00	243.00	233.70	238.70	230.50	226.90	233.70
	258.40	258.40	262.90	266.20	271.70	273.10	270.40	275.90	270.40	273.10	274.50	267.70	270.40
e	266.30	266.30	269.10	271.70	277.20	278.50	275.90	281.30	275.90	278.50	243.00	278.10	275.90
	222.20	223.80	230.50	238.70	247.50	249.90	245.30	254.00	245.30	249.90	254.00	240.80	245.30
	238.70	238.70	243.00	249.90	258.40	260.60	255.20	262.90	255.20	258.40	269.10	251.70	255.20
n	258.40	258.40	262.90	266.30	271.70	273.10	270.40	275.90	270.40	273.10	172.50	267.70	270.40
	143.60	143.60	152.80	163.60	181.10	185.50	174.70	192.20	176.90	183.50	170.30	168.10	176.90
	128.40	138.80	150.40	161.50	179.20	183.50	174.70	190.00	174.70	181.10	215.40	165.80	174.70
	196.50	196.50	200.60	208.80	220.30	225.30	217.00	230.50	218.60	223.80	181.10	212.10	218.60

027	028	029	030	031	032	033	034	035	036	037	038	039
136.20	141.30	138.80	145.90	183.50	181.10	183.50	091.90	126.40	109.00	058.50	081.20	103.40
131.30	136.20	133.70	141.30	179.20	176.90	179.20	082.50	088.80	104.40	026.90	076.20	098.20
111.60	114.10	111.60	119.00	161.50	157.10	159.20	055.70	098.20	081.20	053.70	044.70	076.20
058.50	092.80	043.60	051.60	128.90	126.40	128.90	039.30	080.50	000.00	116.50	049.70	060.50
111.50	096.10	131.30	138.80	152.80	148.40	150.40	111.60	143.60	121.60	148.40	086.50	082.50
102.10	037.10	116.50	126.90	104.40	100.20	103.40	098.20	131.30	109.00	136.20	063.30	058.50
080.50	047.70	094.90	103.40	116.50	111.60	114.10	065.40	109.00	084.60	114.10	041.90	037.10
085.70	141.30	061.40	079.40	154.80	159.20	174.70	085.70	058.50	078.20	150.40	114.10	136.20
076.20	131.30	051.60	059.50	138.80	143.60	165.80	099.00	081.75	078.20	165.80	114.10	126.40
082.50	128.90	058.50	076.20	133.70	136.20	159.20	106.50	088.80	076.20	172.50	119.00	131.30
088.80	133.70	064.40	082.50	126.40	131.30	154.80	114.10	094.90	091.90	176.90	126.40	138.30
116.50	145.90	105.50	097.20	136.20	141.30	161.50	138.80	121.60	119.00	200.60	152.80	141.30
174.70	200.60	165.80	159.20	192.20	196.50	213.80	205.40	252.80	190.00	247.50	210.30	196.50
105.50	136.20	121.60	114.10	087.70	091.90	119.00	172.50	183.50	145.90	205.40	150.40	131.30
220.30	150.40	170.30	163.60	101.30	097.20	109.00	210.30	230.50	192.20	238.70	196.50	176.90
238.70	243.00	233.70	228.60	213.80	212.10	218.60	258.40	259.10	247.50	273.10	249.90	140.80
176.90	251.70	245.30	181.10	226.90	225.30	232.00	266.30	274.50	255.20	278.50	258.40	249.90
196.50	202.20	188.00	181.10	161.50	159.20	168.10	223.80	243.00	208.00	249.90	212.10	198.50
225.30	217.00	260.10	202.20	181.10	179.20	190.00	240.80	254.00	223.80	260.60	228.60	213.80
148.40	243.00	233.70	228.60	213.80	212.10	218.60	258.40	269.10	247.50	273.10	249.90	240.80
150.40	119.00	161.50	168.10	109.00	105.50	079.40	150.40	179.20	174.70	183.50	128.90	124.00
190.00	098.20	163.60	170.30	133.70	128.90	104.40	150.40	176.90	174.70	181.00	126.40	119.00
159.20	165.80	202.20	260.10	126.40	124.00	111.60	202.20	223.80	213.80	225.30	181.10	170.90
174.70	128.90	170.30	176.90	106.50	102.10	076.20	159.20	188.00	183.50	192.20	138.80	131.30

040	041	042	043	044	045	046	047	048	049	050	051	052
065.40	144.10	063.30	116.50	078.20	060.50	051.60	059.50	090.90	126.40	105.50	063.70	091.90
060.50	109.00	058.50	116.60	083.50	055.70	056.60	064.40	085.70	121.60	100.20	048.50	097.20
038.80	085.70	036.50	088.80	050.50	032.80	042.80	040.60	054.90	098.20	078.20	024.70	063.30
048.50	090.90	056.60	092.80	083.50	063.30	089.80	080.50	059.50	103.40	082.50	081.20	097.20
091.90	043.60	091.90	041.90	079.40	094.00	101.30	088.80	064.40	049.70	050.50	103.40	053.20
078.20	036.50	079.40	041.90	060.50	084.60	092.80	079.40	051.60	031.50	037.80	089.80	050.50
046.60	019.70	046.60	023.60	044.70	053.70	065.40	053.70	028.20	034.40	000.00	057.60	026.90
114.10	154.80	143.70	157.10	136.20	138.80	154.80	145.90	133.70	165.80	148.40	116.50	161.50
114.10	145.90	124.00	148.40	141.30	128.90	145.90	138.80	124.00	157.10	138.80	128.90	152.80
119.00	150.40	128.90	154.80	145.90	136.40	152.80	143.60	131.30	161.50	145.90	136.20	159.20
126.40	157.10	136.20	159.20	152.80	143.60	157.10	150.40	138.80	168.10	150.40	141.30	163.60
150.40	165.80	161.50	168.10	174.70	165.80	081.10	172.50	161.50	184.70	159.20	165.80	172.50
213.80	215.40	270.00	218.60	228.60	222.20	232.00	226.90	218.60	222.20	210.30	223.80	222.20
157.10	159.20	159.20	161.50	174.70	165.80	181.10	172.50	161.50	105.80	152.80	170.30	165.80
200.60	183.50	203.70	185.50	213.80	207.10	232.60	226.90	190.00	179.20	176.90	210.30	190.00
251.80	254.00	254.00	255.20	262.90	258.40	181.10	172.50	255.20	258.40	251.70	258.40	258.40
260.60	262.90	262.90	264.80	269.10	266.30	218.60	212.10	264.80	266.30	258.40	226.30	266.30
215.40	217.00	218.60	218.60	230.50	223.50	233.70	228.60	220.30	223.80	212.10	225.30	222.20
232.00	233.70	233.70	235.30	243.00	238.70	247.50	243.00	235.20	238.70	228.60	240.80	238.70
251.70	254.00	254.00	255.20	262.20	262.90	258.40	260.60	255.20	258.40	249.90	258.40	258.40
133.70	087.70	128.90	090.90	111.60	136.20	133.70	121.60	116.50	089.80	102.10	136.20	098.30
119.00	094.90	119.00	091.16	121.60	138.80	141.30	131.30	114.10	085.70	100.20	143.60	100.50
188.00	154.80	188.00	157,10	179.20	192.20	196.50	185.50	172.50	148.40	159.20	196.50	163.50

053	054	055	056	057	058	059	060	061	062	063	064	065
045.50	050.50	133.70	126.40	131.30	121.60	061.40	049.70	039.30	136.20	141.30	086.50	085.70
050.50	053.70	128.90	121.60	121.40	116.50	077.30	055.70	045.90	131.30	136.20	081.20	090.90
036.50	030.50	109.00	099.00	103.40	094.10	043.60	044.70	034.80	111.60	114.10	050.50	057.60
085.70	080.50	114.10	103.40	109.00	098.20	083.20	102.10	091.90	114.10	116.50	055.70	090.90
109.00	102.10	084.60	076.20	059.50	051.60	085.70	106.50	106.50	061.40	080.50	080.50	060.50
099.00	094.10	026.90	015.90	018.70	027.50	082.50	099.00	099.00	085.90	023.60	057.60	053.70
076.20	060.50	044.70	034.80	041.90	031.25	050.50	082.50	081.20	046.60	048.50	064.00	036.50
150.40	145.90	172.50	165.80	170.30	161.50	148.40	165.80	157.10	179.20	176.90	128.90	154.80
143.60	136.20	165.80	157.10	161.50	152.80	141.30	157.10	148.40	170.30	168.10	119.00	147.90
232.00	228.60	218.60	213.80	217.00	222.20	230.50	240.80	235.30	223.80	222.20	215.40	226.90
245.30	243.00	233.70	228.60	233.70	236.90	243.00	251.70	247.50	238.70	236.90	232.00	240.80
262.90	260.60	254.00	251.70	254.00	255.20	262.90	267.70	264.80	258.40	255.20	254.00	260.00
141.30	133.70	063.30	081.20	091.90	091.90	119.00	141.30	141.30	078.20	058.50	124.00	164.00
150.40	145.90	061.40	079.40	080.80	088.80	136.20	150.40	150.40	065.40	026.60	121.60	114.10
202.20	198.80	133.00	141.30	150.40	150.40	190;00	202.20	203.70	138.80	128.90	176.90	177.30
161.50	157.10	082.50	091.90	101.30	101.30	145.90	161.50	161.50	087.70	077.30	131.30	124.00
181.10	176.90	106.50	116.50	124.00	124.00	105.80	174.70	181.10	111.60	101.30	152.80	145.90
245.30	243.00	192.20	200.60	205.40	205.40	235.30	245.30	245.30	196.50	188.00	125.30	222.20
157.10	152.80	104.40	094.10	109.00	109.00	143.60	163.60	163.60	111.60	109.00	128.90	131.30
034.40	028.20	084.60	076.20	063.30	063.30	031.10	041.90	040.60	087.70	089.80	025.40	036.30
094.90	154.80	154.80	154.80	172.80	179.20	163.60	157.10	159.20	188.00	185.50	194.50	185.50
150.40	145.90	061.40	079.40	088.80	088.80	136.20	150.40	150.40	065.40	056.60	121.60	114.10
262.90	260.60	254.00	251.70	234.00	255.20	262.90	267.70	264.80	258.40	255.40	254.00	260.60

066	067	068	069	070	071	072	073	074	075	076	077	078
094.90	154.80	154.80	154.80	172.80	179.20	163.60	157.10	159.20	188.00	185.50	194.50	185.50
100.20	154.80	154.80	154.80	172.80	181.10	163.60	157.10	163.30	188.00	185.50	190.00	181.10
065.40	133.70	136.30	133.70	159.20	161.50	143.60	138.80	143.60	168.10	165.80	172.50	161.50
100.20	141.30	141.30	141.30	159.30	165.80	150.40	143.60	157.10	163.60	161.50	176.90	165.80
056.60	065.40	065.40	082.50	103.40	114.10	050.60	103.40	045.50	119.00	116.50	116.50	105.50
056.60	047.70	048.50	046.60	078.20	085.20	057.60	050.50	084.60	105.50	102.10	106.50	094.90
033.40	080.50	081.20	080.50	102.10	111.60	090.90	083.50	090.90	121.60	119.00	121.60	111.60
163.60	192.20	192.20	192.20	207.10	194.50	200.60	179.20	200.60	205.40	203.70	222.20	215.40
154.80	181.10	181.10	181.10	198.80	183.50	190.00	168.10	190.00	196.50	194.50	212.10	205.40
161.50	185.50	188.00	185.50	202.20	190.00	194.50	172.50	196.50	202.20	200.60	215.40	208.80
165.80	183.50	183.50	183.50	200.60	183.50	192.20	168.10	205.40	198.80	196.50	213.80	207.10
176.90	192.20	192.20	192.20	207.10	213.80	200.60	194.50	212.10	192.20	205.40	203.70	210.30
223.80	235.30	236.90	235.30	245.30	249.90	240.80	236.90	249.90	235.30	245.30	243.00	247.00
168.10	183.50	185.50	181.10	170.30	176.90	192.20	168.10	205.40	150.40	163.60	168.10	176.90
194.50	165.80	165.90	159.20	141.30	143.60	163.60	159.20	176.90	128.90	128.90	121.60	131.30
258.40	254.00	251.70	249.90	240.80	240.80	255.20	249.90	258.40	232.00	233.70	230.50	236.90
266.30	260.60	260.60	258.40	249.90	249.90	264.80	258.40	266.30	243.00	243.00	251.70	255.20
225.30	215.40	215.40	210.30	198.80	198.80	222.20	210.30	223.80	185.50	185.50	179.20	188.00
240.80	232.00	288.60	226.90	213.80	213.80	236.90	226.90	240.80	203.70	205.40	198.80	205.40
258.40	254.00	251.70	249.90	240.80	240.80	255.20	249.90	258.40	232.00	232.00	226.90	233.70
101.30	045.50	044.70	036.10	015.90	030.50	053.70	050.50	060.50	037.10	033.40	045.50	033.80
109.00	031.50	032.10	038.80	052.70	076.20	021.20	058.50	022.80	063.30	080.50	077.30	057.60
168.10	114.10	114.10	106.50	090.90	094.90	126.40	114.10	126.40	077.30	094.10	057.60	077.30

079	080	081	082	083	084	085	086	087	088	089	090	091
212.10	202.20	202.20	198.80	281.10	207.10	232.00	222.20	226.90	226.70	233.70	238.70	226.90
207.10	198.80	198.80	194.50	176.90	205.40	228.60	218.60	215.40	223.80	230.50	237.30	223.80
192.20	179.20	181.10	176.90	159.20	188.00	215.40	203.70	202.20	208.80	215.40	220.30	210.30
196.50	183.50	185.50	181.10	103.60	192.20	218.60	207.10	205.40	212.10	220.30	198.80	183.50
145.90	116.30	119.00	111.60	090.90	124.00	159.20	145.90	143.60	152.80	161.50	225.30	213.80
128.90	116.50	119.00	114.10	091.90	126.40	161.50	145.90	143.60	152.80	161.50	105.40	192.20
145.90	131.30	133.70	128.90	109.00	141.30	174.70	159.20	157.10	165.80	174.70	220.20	188.00
236.90	226.90	228.60	225.30	212.10	220.30	243.00	235.30	232.00	183.50	174.70	152.80	181.10
226.90	213.30	215.40	212.10	202.20	212.10	236.90	225.30	223.80	172.50	163.60	138.80	170.30
230.50	218.60	220.30	217.00	207.10	207.10	232.00	222.00	220.30	165.80	157.10	133.70	165.80
226.60	215.40	217.00	213.80	203.70	210.30	228.60	217.00	215.40	159.20	150.40	136.20	159.20
235.30	212.10	213.80	212.10	217.00	247.50	233.70	220.30	222.30	170.30	161.50	105.50	152.80
264.80	249.90	249.90	247.50	251.70	157.10	262.90	254.00	255.20	218.60	212.10	076.20	128.90
220.30	179.20	181.10	176.90	185.50	109.00	121.60	138.80	141.30	200.60	207.10	085.70	057.60
183.50	136.20	136.20	131.30	141.30	222.20	060.50	086.50	089.80	159.20	168.60	121.60	028.20
262.90	238.70	240.80	236.90	243.00	245.30	196.50	207.10	208.80	249.90	254.00	133.70	145.90
274.50	255.20	258.40	255.20	260.60	168.10	223.80	235.30	236.90	266.30	269.10	152.80	163.60
228.60	190.00	192.20	188.00	196.50	168.10	133.70	148.40	152.00	208.80	215.40	065.40	080.50
243.00	208.10	208.80	205.40	212.10	188.00	154.80	170.30	172.50	225.30	232.00	094.10	104.40
260.60	235.30	236.90	233.70	240.80	218.60	192.20	103.70	207.10	247.50	251.70	143.60	145.90
114.10	048.50	050.50	045.50	022.80	057.60	105.50	088.80	085.70	097.20	109.00	217.00	152.80
076.20	081.20	083.50	078.20	048.50	090.90	128.90	114.10	111.60	121.60	131.30	235.30	176.90
136.20	080.50	083.50	077.30	087.70	044.70	046.60	028.80	024.70	109.00	119.00	185.50	111.60

092	093	094	095	096	097	098	099	100	101	102	103	104
220.20	223.90	215.40	235.20	236.90	271.70	269.10	274.50	269.10	272.20	233.80	233.70	175.90
218.60	220.30	212.10	232.00	233.70	270.40	264.80	273.10	267.70	274.50	226.90	230.60	274.50
205.40	205.40	198.80	217.00	220.30	264.80	255.80	267.70	258.40	269.10	207.10	217.00	269.10
176.90	176.90	165.80	192.20	196.50	149.90	240.80	254.00	243.00	255.20	168.10	185.50	255.20
208.80	210.30	202.20	220.30	223.80	266.30	258.40	269.10	262.90	271.70	210.30	220.30	270.40
185.50	188.00	176.90	202.20	203.70	254.00	245.30	258.40	249.90	262.90	188.00	200.60	260.60
181.10	183.50	172.50	198.80	200.60	251.70	243.00	255.10	247.50	260.60	183.50	196.50	258.40
174.70	176.90	152.80	192.20	194.50	243.00	232.00	247.50	236.90	249.90	131.30	145.90	245.30
163.60	165.80	141.30	181.10	183.50	236.90	223.80	243.00	228.60	245.30	219.00	133.70	238.70
159.20	159.20	133.70	174.70	179.20	232.00	218.60	238.70	223.80	243.00	111.60	126.40	235.30
152.80	154.80	128.90	170.30	172.50	228.60	215.40	235.30	218.60	238.70	105.50	121.60	230.50
145.90	145.90	106.50	161.50	152.80	210.30	196.50	217.00	202.20	222.20	082.50	098 .20	215.40
116.50	124.00	111.60	141.30	126.40	159.20	148.80	168.10	145.90	172.50	089.50	083.50	109.00
050.50	051.60	038.30	078.20	082.50	170.30	150.40	176.90	157.10	183.50	061.40	077.20	181.10
040.60	035.50	083.50	000.00	063.30	161.50	141.30	168.10	138.80	174.70	106.50	114.10	172.50
133.70	135.30	168.10	157.10	111.60	018.70	031.50	031.50	019.70	037.80	154.80	141.30	215.40
152.80	159.20	185.50	174.70	131.30	063.30	051.60	082.50	049.70	088.90	172.50	159.20	000.00
057.60	063.30	106.50	090.90	032.80	102.10	091.90	114.10	088.80	119.00	098.20	104.40	116.50
091.90	098.20	124.00	116.50	057.60	084.60	053.70	094.10	060.50	100.20	116.50	124.00	099.00
133.70	141.30	170.30	157.10	111.60	087.70	056.60	097.20	063.30	103.40	161.50	168.10	101.30
161.50	157.10	190.00	138.80	181.10	247.50	235.30	025.10	240.50	254.00	207.10	212.10	247.50
185.50	181.10	210.30	163.60	203.70	255.20	247.50	260.60	249.90	262.90	223.80	230.50	260.60
121.60	116.50	152.80	098.20	143.60	213.80	200.60	220.30	205.40	223.80	172.50	176.90	223.80

105	106	107	108	109	110	111	112	113	114	115	116	117
254.00	058.50	170.30	159.20	152.80	170.30	172.50	245.30	249.90	266.30	258.40	262.90	183.50
243.70	058.50	165.80	154.80	148.40	157.10	243.00	243.00	247.50	264.80	255.20	260.60	179.20
243.00	064.40	145.90	136.20	128.90	145.90	148.40	232.00	236.90	255.20	247.50	251.70	161.50
215.40	131.30	089.90	078.20	061.40	116.50	091.90	208.80	212.10	238.70	226.90	235.30	120.40
245.20	154.80	174.70	163.60	157.10	196.50	190.00	235.30	240.80	258.40	249.90	254.00	163.60
228.60	152.80	161.50	152.80	145.90	185.50	163.60	215.40	220.30	245.30	233.70	240.80	136.30
223.80	131.30	148.40	138.80	131.30	172.50	150.40	212.10	217.00	243.00	230.50	238.70	131.30
181.10	181.10	015.90	026.90	031.50	042.80	041.90	196.50	193.50	118.60	217.00	230.50	109.00
170.30	179.20	024.20	000.00	019.70	052.70	026.90	185.50	183.50	210.30	208.80	222.20	094.90
165.80	185.50	032.80	018.70	028.60	059.50	017.40	179.20	179.20	205.40	203.70	217.00	087.70
159.20	192.20	038.80	026.90	035.50	065.40	000.00	172.50	172.20	202.20	200.60	213.80	081.20
138.80	210.30	065.40	056.60	063.30	106.50	042.80	154.00	152.80	179.20	176.90	194.50	101.30
101.30	254.00	154.80	143.60	150.40	176.90	131.30	119.00	116.50	145.90	119.00	143.60	154.80
121.60	215.40	143.60	133.70	141.30	168.10	121.60	102.10	109.00	148.40	131.30	143.60	053.70
121.60	247.80	192.20	183.50	190.00	212.00	172.50	091.90	099.00	157.10	121.60	133.70	121.60
087.70	277.20	235.30	228.60	233.70	249.40	220.30	097.20	083.50	040.00	052.70	060.50	198.80
109.00	282.60	245.30	240.80	245.30	258.40	233.70	119.00	104.40	066.50	083.50	090.90	212.10
050.50	255.20	196.50	188.00	194.50	217.00	176.90	015.90	026.90	078.20	049.70	056.60	141.30
057.60	266.30	212.10	203.70	208.00	230.50	194.50	039.30	039.30	052.70	030.50	028.60	161.50
109.00	277.20	240.80	235.30	238.70	254.00	225.30	091.90	091.90	058.50	083.50	047.70	198.80
222.20	198.80	213.80	207.10	212.10	230.50	196.50	203.70	208.80	235.30	222.20	230.50	150.40
236.90	198.80	192.20	183.50	190.00	212.10	172.50	218.60	223.80	247.50	236.90	243.00	170.30
183.50	235.30	226.90	218.60	223.80	243.00	210.30	157.10	163.60	198.80	181.10	192.20	165.80

118	119	120	121	122	123	124	125	126	127	128	129	130	Supply
192.20	168.10	200.60	170.30	188.00	205.40	218.60	192.20	218.60	126.90	223.00	176.90	192.20	285.00
188.00	163.60	196.50	165.80	183.50	202.20	215.40	188.00	217.00	223.80	220.30	172.50	188.00	435.00
168.10	145.90	176.90	148.40	163.60	183.50	200.60	168.10	200.60	131.30	205.40	152.80	168.10	395.00
116.50	111.60	152.80	114.10	128.90	138.80	176.90	126.40	152.80	163.60	159.20	116.50	126.40	260.00
188.00	150.40	183.50	152.80	168.10	194.50	205.40	174.70	210.30	218.60	215.40	154.80	170.30	205.00
163.30	121.60	157.10	126.40	141.30	168.10	181.10	148.40	190.00	200.60	196.00	126.40	145.90	425.00
157.10	116.50	143.60	109.00	136.20	154.80	168.10	133.70	174.70	185.50	181.10	121.60	138.80	595.00
065.40	124.00	119.00	82.50	131.30	098.20	124.00	085.70	119.00	131.30	126.40	119.00	100.20	355.00
052.70	111.60	104.40	059.50	119.00	084.60	111.60	063.30	105.50	119.00	114.10	105.50	086.50	290.00
065.40	124.00	190.00	082.50	131.30	098.20	124.00	085.70	119.00	131.30	126.40	119.00	100.20	540.00
038.80	097.20	087.70	047.70	105.50	061.40	098.20	050.50	091.90	105.50	100.20	091.90	063.30	549.00
015.90	105.50	051.60	055.70	114.10	034.40	061.40	031.10	055.70	077.30	063.30	100.20	091.90	1,570.00
101.30	168.10	100.20	131.30	152.80	083.50	081.20	124.00	053.70	050.50	045.50	163.60	148.40	245.00
121.60	048.50	106.50	037.70	028.60	104.40	077.30	111.60	126.40	138.80	133.70	043.60	061.60	400.00
159.20	116.50	145.90	143.60	096.10	143.60	119.00	165.80	163.60	174.70	170.30	111.60	128.90	730.00
200.60	194.50	188.00	215.40	179.20	185.50	163.60	205.40	203.70	212.10	208.80	190.00	205.40	285.00
213.80	208.80	203.70	228.60	296.50	202.20	181.10	217.00	215.40	225.30	222.20	205.40	117.00	395.00
150.40	136.20	136.20	163.60	119.00	136.20	109.00	157.10	154.80	165.80	161.50	131.30	148.40	645.00
170.30	159.20	152.80	183.50	143.60	125.80	126.40	172.50	170.30	181.10	176.90	154.80	170.20	130.00
207.10	194.50	196.50	215.40	179.20	194.50	172.50	212.10	208.80	217.00	213.80	190.00	205.40	670.00
202.20	136.20	196.50	170.30	152.80	208.80	215.40	190.00	222.20	230.50	226.90	141.30	157.10	280.00
202.20	157.10	198.80	170.30	172.50	208.80	217.00	192.20	222.20	230.50	226.90	161.50	176.90	280.00
213.80	152.80	210.30	188.00	168.10	220.30	228.60	205.40	235.30	243.50	240.80	157.10	172.50	395.00

CODE	DESTINATION	Qty. in M/T	Cost in Rs.
006	Amritsar	151	31.10
009	Allahabad	107	32.20
015	Phagwara	27	34.80
005	Ferozpur	156	22.00
013	Faridkot	174	16.70
037	Ganganagar	105	26.90
004	Ambala	356	25.40
014	Patiala	39	31.50
004	Ambala	32	58.50
014	Patiala	18	59.50
001	Ballabhgarh	138	00.00
002	Faridabad	44	49.70
036	Kota	28	48.50
038	Agra Cantt.	112	41.90
040	Mathura	93	56.60
043	Barabanki	19	37.10
066	Sitapur	38	60.50
028	Satna	221	31.50
044	Bareilly	66	15.90
049	Firozabad	81	18.70
056	Naini	24	41.90
057	Pratapgarh	34	19.70
038	Agra Cantt.	63	46.60
041	Palamnagar	2	44.70
042	Aligarh	91	53.70
044	Bareilly	89	53.70
045	Bulandshahar	47	28.20
047	Moradabad	94	00.00
048	Etawah	109	26.90
050	Faizalganj	42	33.40
052	Hardoi	78	85.70

UNITS	CODE	DESTINATION	Qty. in M/T	Cost in Rs.
10. CHAVAJ	003	Rohtak	10	86.50
	007	Ludhiana	14	82.50
	018	Bhopal	78	58.50
	027	Katni	5	119.00
	029	Ujjain	319	32.80
	038	Agra Cantt.	10	59.50
	107	Ahmedabad	163	145.90
	110	Gandhidham	55	174.30
11. SURAT	003	Rohtak	125	161.50
	010	Hoshiarpur	33	170.30
	012	Sangrur	99	00.00
	015	Phagwara	74	63.30
	111	Surat	50	190.00
	130	Akola	54	205.40
12. TROMBA & THAL	007	Ludhiana	140	185.50
	008	Gurdaspur	10	114.10
	014	Patiala	82	143.60
	017	Amla Loco Shed	18	138.80
	020	Gwalior	22	101.30
	021	Anach Loco Shed	9	126.40
	022	Itarsi	65	82.50
	023	Jabalpur	26	141.30
	025	Khandwa	63	81.10
	039	Jhansi	145	82.50
	046	Bijnor	160	98.20
	102	Gullargo	32	101.30
	103	Raichur	15	15.90
	117	Amravati	50	105.50
	118	Thana	106	51.60
	119	Nagpur	148	55.70
	120	Ahmadnagar	66	34.40

GANDAM	024	Turnar Loco Shed	19	64.40	22. BARAUNI	068		175	32.10
	063	Shivpur	73	26.40		072		39	21.20
	094	Hyderabad	293	38.30		074		66	22.80
	122		15	28.60	23. TALCHAR	008	Gurdaspur	38	230.50
NADA	091	Bhimwaram	144	28.20		026	Bilaspur	22	126.40
	092	Guntur	164	40.60		031	Durg	30	126.40
	093	Gudivada	218	35.30		032	Raipur	65	124 .00
	094	Hyderabad	3	83.50		033	Raigarh	12	111.60
	095	Kakinada	175	00.00		017	Midnapur	38	57.60
	096	Nelhare	26	63.30		083	Assansol	15	44.70
IN	097	Kottayam	24	18.70		085	Berhampur	42	46.60
	100	Trichur	23	19.70		086	Bhubaneshwar	14	28.80
	101	Kochuvaelli	9	37.80		087	Cuttack	34	24.70
	114	Mangalore	171	40.00		106	Bari Brahan	95	235.30
	115	Salem	58	52.70		019	Sagor	14	36.20
GALORE	098	Palaghat	61	51.60		067	Amanapur	106	52.70
	104	Mangalore	123	00.00	24. DURGAPUR	068	Righraghat	29	53.70
	114	Mettupallayam	211	66.50		070	Kusunda	15	24.20
LI	096	Nelhare	85	32.80		073	Rajhura	3	55.70
	105		221	50.50		083	Asansol	113	15.90
	112	Karukkakit	226	15.90	25. HALDIA	016	Keraba	30	174.70
	113	Katpadi	208	26.90		071	Patratu	4	58.50
	115	Salem	5	49.70		075	Tatanagar	3	40.60
ELLI	116	Trichnapalli	130	28.60		076	Ranchi	14	57.60
ICORIN	053	Muzaffarnagar	94	34.40		077	Midnapur	15	26.90
	054	Meerut	117	28.20		078	Bankura	27	38.30
	058	Rai-Bareli	25	63.30		080	Kalighat	72	32.10
	059	Rampur	130	31.10		081	Kay	89	34.40
	060	Rishikesh	5	41.90		082	Howrah	90	28.60
	061	Saharanpur	94	40.60		088	Jharguda	33	77.20
	064	Shikohabad	31	25.40		089	Rourkela	2	88.70
	065	Shahjahanpur	68	36.20	26. NAMRUP	011	Bhatinda	93	174.70

C O N C L U S I O N

In finding the least cost routes to the transportation cost of IFFCO, the initial matrix Table No. 1 describes the supply and demand position. The Table No. 2 gives the optimal allocation of the Urea to different destinations from the supply depots together with quantity and cost involved. Table No. 3 is the optimal allocation of Urea in the coded form for the different stations.

NOTE:- TABLE NO 3 is in the pocket

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